THIS WEEK'S National Petroleum NEWS

Index to Coming Meetings

American Petroleum Institute, Technical Committee on Prevention of Pollution, Chicago, Nov. 30.

American Petroleum Institute, Stevens Hotel, Chicago, Dec. 3, 4 and 5.

Indiana Petroleum Association, Hotel Lincoln, Indianapolis, Dec. 5, 6.

Nebraska Independent Oil Men's Association, Paxton Hotel, Omaha, Neb., Dec. 11, 12, 13.

Ohio Petroleum Marketers Association, Deshler-Wallick Hotel, Columbus, O., Feb. 19, 20, 21.

Michigan Oil Men's Association, Statler Hotel, Detroit, March 19, 20, 21.

American Association of Petroleum Geologists, Roosevelt Hotel, New Orleans, La., March 20, 21 and 22.

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EDWARD T. Moore, president of the Simms Oil Co., Dallas, now heads the Texas division of the Mid-Continent Oil & Gas Association as its helmsman for the next year. His election to the association presidency took place at San Angelo, early in November, after which Mr. Moore placed himself on record briefly for cooperative work looking toward greater permanency in petroleum industry stabilization. A resolution adopted by the Texas division directed him to appoint a conservation committee of ten to work with the southwestern industry in clarifying stabilization problems.

Mr. Moore has been president of the Simms Oil Co., an integrated Independent unit operating principally in Texas, Oklahoma and Arkansas, since leaving the Stone & Webster organization about seven years ago. He is also president of the Simms Petroleum Co., a holding corporation, with holdings through subsidiaries in Kansas, Louisiana, New Mexico and Mississippi.

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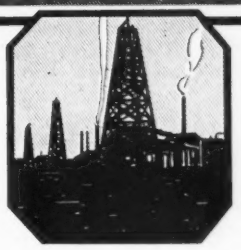

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Oil Industry Itself, Not Wall Street, Holds Key to Profitable 1930

By Roger B. Stafford
N. P. N. STAFF WRITER

CLEVELAND, Nov. 26

IT IS within the power of our industry itself to make 1930 a profitable year regardless of the recent deflation of stock market values.

To accomplish this, it is necessary to keep production of both crude oil and refined goods on a level with market demand and not run wild by building unnecessary reserve stocks.

The foregoing is in substance what leaders in the industry have told NATIONAL PETROLEUM NEWS the last few days.

Demand for all products will be larger than ever before, is the unanimous belief of presidents of many of the largest companies. By curtailing crude oil production through the voluntary efforts now being employed, and by gaging the output of refineries with the yardstick of market demand, our industry should progress on a sound basis with a fair return on the capital and effort invested.

It will be necessary only to use intelligence in governing output.

Our industry is better equipped than ever to regulate supply to market demand. The American Petroleum Institute is now making available each week the volume of crude oil charged to stills, the output and stocks of gasoline and fuel oil, the largest two products. These statistics are compiled and published for the industry's consumption only a few days after refiners analyze their week's operations. These compilations provide an index as to whether refinery operations are being held to market demand.

The institute's weekly report on crude oil production, when considered along with the monthly reports on crude oil stocks of the U. S. Bureau of Mines, shows whether too much crude oil is being produced. The producing division of our industry may study these figures and regulate its operations so as to maintain a sound economic position.

The deflation of the stock market will have no effect on the modernization programs of refineries and such new building as the growing demand for our products will warrant. Several companies have told NATIONAL PETROLEUM NEWS the amounts of their budgets for next year for building and modernization. The sum runs into many millions of dollars so petroleum will contribute its share to the effort of President Hoover to maintain genuine prosperity in 1930.

Oil stocks now appear to have ridden out the Wall Street storm and many of them have made notable recoveries from the low prices they suffered in the panicky days of late October and early November. All issues whose market prices were carried to unreasonable heights by speculative groups from outside our industry seem to have been thoroughly deflated and some of the stocks, in the opinion of several industry leaders, are still on the bargain counter. How stock prices have moved this year and the amount of their recovery from the panicky markets, are shown in an accompanying table.

An important factor that will help gasoline demand in 1930, is expected from the conferences President Hoover held last week with railroads, industrial, agricultural and labor leaders in Washington. New construction work will be stimulated, it is likely, in much of which internal combustion engines of various types are used.

Road building and general construction contractors now form one of the best groups of gasoline consumers and any increase in volume of building will result in a large increase in gasoline consumed. If building can progress at a high rate it will mean a larger demand for gasoline and lubricants even if the number of automobiles in operation should not increase a single car next year.

Walter C. Teagle, president of the Standard Oil Co. (New Jersey), is

1930 Building Program Of Few Companies

Standard Oil Co. (New Jersey)—Normal building and plant modernization program.

Continental Oil Co.—$10,500,000 to be spent in 1930 to complete present construction program.

Gulf Oil Corp.—$75,000,000 called for in 1930 building and modernization program.

The Texas Corp.—$100,000,000 to be spent in expansion in 1930.

Sun Oil Co.—$15,000,000 estimated for new construction and rebuilding.

one of those who believe our industry has the power to make 1930 what it will.

"The supply of crude in the United States through voluntary curtailment within the last few weeks has been reduced to a point where storage stocks are actually being drawn upon to meet refinery demands," Mr. Teagle told NATIONAL PETROLEUM NEWS. "No crude, however, would be coming from storage if gasoline were not being produced in excess of the present market requirements. It has, however, in past years been customary during winter months for refineries to overproduce current gasoline requirements as against increased summer demands.

"The necessity for the continuance of this practice is questionable, as with the recently inaugurated weekly statements of the American Petroleum Institute showing total gasoline and fuel stocks, as well as crude run to stills, refiners can keep in closer touch with the actual situation than ever before, and are therefore in a position to avoid the accumulation of unnecessary stocks of finished products.

"While I am not so optimistic as to expect such record gains in consumption of petroleum products as occurred in 1929, there is every reason to expect a normal increase in consumption in 1930."

Asked whether the stock market deflation would have any effect on the New Jersey company's building and modernization program in 1930, Mr. Teagle said:

"Our 1930 program for new construction and modernizing of plants to the end of increased efficiency was determined upon before the stock market liquidation. We have not altered this program in any way since. We confidently expect some increase next year in the consumption of petroleum products and are proceeding with the schedule of improvements involving expenditure of an aggregate amount fully as large as that spent in any recent year."

E. G. Seubert, president of the Standard Oil Co. of Indiana, said construction and rebuilding by his company would be governed by the progress of the company's business, but that no extensive construction was expected.

"I can see no reason why demand for gasoline during the coming year should not keep pace with the 1929 requirements," Mr. Seubert answered a question as to the size of the expected gain in 1930.

E. B. Reeser, president of the American Petroleum Institute and the Barnsdall Corp., is confident that 1930 will be a very bright year for petroleum.

"In my opinion, the outlook for the petroleum industry during next year is brighter than for many years," Mr. Reeser said. "Common sense in the production department is the basis for operations in nearly all the flush fields in the United States. It is fair to assume that this policy will continue.

"The code of ethics has been accepted by an overwhelming number of dealers throughout the United States. This indicates a strong trend in the right direction. With production and distribution fairly well in hand, we may confidently hope that the manufacturing end will be operated under a more sensible policy.

"It is not reasonable to expect the gasoline demand to continue to increase on the same basis of percentage as this year's volume increased over last year's. The increase will, however, continue to be substantial. Many stretches of hard surface highway heretofore in use, are being connected by the completion of gaps, making a continuation of the use of many miles which were out of commission during wet weather, because of the uncompleted gaps. This will assist in keeping the increase up to at least a normal rate.

"The stock deflation will not have any appreciable effect on consumption. The present volume of consumption is founded largely on the prosperity of the people as a whole, especially the wage earning class. Undoubtedly, some of these have lost money on the stock market, but most of them have not been affected.

"Oil stocks, generally, are selling very much below their real values; and prices, in my opinion, will return to their former levels, or higher. Stocks will, ultimately, sell on the basis of their earning power."

W. G. Skelly, president of the Skelly Oil Co., is hopeful in view of the balance established between crude oil supply and demand.

"For the first time in its history, the petroleum industry has a controlled balance between the supply of and demand for crude oil, this control being self-imposed and arising out of the fine cooperative consciousness of which oil men for this year have demonstrated themselves to be the possessors," Mr. Skelly said.

"Granted a continuance of this splendid spirit and the intelligent action that proceeds from it, the petroleum industry faces the year 1930 with a reasonable expectation of favorable financial results. In short, since I have faith that intelligence will continue to dominate the industry, I expect 1930 to be a very good year.

"I expect a very large increase in gasoline consumption in 1930, although I think it possible that the percentage of increase may be somewhat diminished. As far as stock deflation is concerned, I think it will have little effect on the petroleum industry one way or the other, except as automobile production may be, probably will be, sharply curtailed in the first half of 1930.

"I believe that the stocks of sound, established, integrated oil companies are selling far below their real values. I believe that as a group they have not at any time this year sold at nearly as high a level as most other stocks in the market or at nearly as high a level, indeed, as would have been warranted upon the basis of intrinsic values and present and prospective earning power."

Oil men are thinking again, in the opinion of D. J. Moran, president of the Continental Oil Co.

"Brains have gone back to work," Mr. Moran told NATIONAL PETROLEUM NEWS. "It is believed that executives in the oil industry are studiously applying themselves to the proper coordination of basic factors within it. With this statement we have the premise for a better order of things and a more pleasant outlook.

"The normal increased demand for gasoline will be experienced in 1930. This increase will be met by the farmer in spite of the possible decline in automobile sales. It follows that other petroleum products will ratably trail the prime commodity.

"Well organized, reputable and sound companies have been increasing their stockholders' equity much beyond prevailing and quoted prices for the past five years.

"Revamping a time honored proverb, I quote: 'There is not a thing living or dead fit for those interested in oil, of which they need be afraid.'"

Mr. Moran said oil stock price fluctuations so far as he knows have not been due to any market manipulations by management.

The Continental in 1930 will spend $10,500,000 to conclude a program of construction it has already authorized. This program will be expedited, he said, in view of a need that is "more than apparent in a forecast of better conditions within the industry."

Prices of Oil Stocks Decline 10.8%

MARKET value of the oil stocks listed on the New York Stock Exchange fell $801,726,716, or 10.8 per cent, from Oct. 1 to Nov. 1. The average per share market value fell from $45.28 to $40.48 a share.

The total value of oil stocks on the exchange amounted to $7,405,531,242 Oct. 1 and to $6,603,804,526 Nov. 1.

The decline was the smallest of any of the groups of stocks which had a market value in excess of a billion dollars, with the single exception of leather and boots. In size the oil group on the exchange is exceeded only by the railroad group.

Movement of Oil Stock Prices in New York Markets

Common shares of companies whose shares are traded on the New York Stock Exchange and the New York Curb Market, are covered in this tabulation. Most of the stocks are of strictly United States companies, but some are foreign companies whose stocks are held in large quantities by United States citizens. Column headings explain the nature and time of each price or price variation.

Companies	Price Jan. 2, 1927	Price July 5, 1927	Price Jan. 3, 1928	Price July 2, 1928	Price Dec. 31, 1928	1929 Price	1929 High Month	1929 Price	1929 Low Month	High Since Oct. 23	Low Since Oct. 23	Price Close Nov. 22	Change Dec. 31- Nov 22	Nov. 22 Price under Year's High	Nov. 22 Price Over Year's Low
Amerada Corp.	32½	30¾	30½	31¾	39	42⅜	Jan.	17½	Oct.	25	17½	21½	—17½	—20⅞	+ 4
American Maracaibo	6⅞	4	3¼	4½	8½	8⅝	Jan.	1⅛	Oct.	2⅝	1⅛	2	— 6⅝	— 6⅝	+ ⅜
American Republics	35⅛	56⅛	74⅝	64⅜	62⅜	64¾	Jan.	12½	Nov.	29⅝	12½	20⅝	—41¾	—43⅞	+ 8⅛
Associated Oil	49½	44	39¾	45⅛	43¾	47¼	Apr.	35¼	Nov.	45	35¼	40	— 3¾	— 7¼	+ 4¾
Atlantic Refining	113	111½	107½	140⅞	66	77⅞	July	30	Oct.	52	30	42⅝	—23⅜	—25¼	+12⅝
Barnsdall Corp. A	27¾	26¼	25	21⅛	42⅛	49⅛	May	20	Oct.	31	20	26⅜	—15¾	—22¾	+ 6⅜
Beacon Oil	20¼	....	....	15½	21⅞	32⅞	July	15	Nov.	24½	15	17½	— 4⅜	—15⅜	+ 2½
Borne-Scrymser	64½	59½	56	48½	47	46½	Feb.	25	Nov.	27½	25	25	—22	—21½	0
Chesebrough Mfg.	76½	103	117¼	134	142¼	210	Aug.	130	Nov.	161	130	137½	— 4¾	—72½	+ 7½
Cities Service	50⅞	45½	55⅝	66¾	88¾	68½	Oct.	20	Oct.	46⅛	20	30½	.....	—38	+10½
Continental Oil (Marland)	57½	32⅜	35⅜	35	41⅛	47⅛	Jan.	10	Oct.	32½	10	27	—14½	—20⅛	+17
Continental Oil (Maine)	20¼	17	22¼	16¾	19⅜	29	Mar.	10	Oct.	18⅝	10	15½	— 4⅛	—13½	+ 5½
Cosden Oil Co	....	....	....	....	....	135	Oct.	42	Nov.	107	42	80	.....	—55	+38
Creole Petroleum	13¾	10	10	14½	11¼	11¾	Jan.	5⅝	Oct.	7¾	5⅝	7¼	— 4	— 4½	+ 1⅝
Crown Central	2¾	1¼	4/5	2¼	1½	2½	Apr.	⅝	Sept.	1	¾	¾	— ¾	— 1¾	+ ⅛
Darby Petroleum	....	7½	8¼	21⅞	24⅞	26	Jan.	6½	Nov.	10⅞	6½	8⅞	—16	—17½	+ 2⅜
Derby Oil & Refining	2½	....	1	1	2¼	11	June	2	Jan.	10⅞	4½	5½	+ 3¼	— 5½	+ 3½
General Asphalt	86⅜	73	81¾	76½	74⅝	94¾	Aug.	42¼	Nov.	66½	42¼	54¼	—20⅜	—40½	+12
Gulf Oil Corp	95¾	91	116	124½	148⅛	209	Aug.	115	Nov.	165¼	115	136	—12⅛	—73	+21
Houston Oil	62	159½	155	137	98	109	Apr.	26	Oct.	70⅝	26	50½	—47½	—58½	+24½
Humble Oil & Refining	61¼	56⅞	67½	78	102¾	128	Aug.	74⅛	Nov.	123⅞	74⅛	90⅜	—12⅜	—37⅞	+16
Imperial Oil of Canada	37¾	42⅜	59½	67½	98¾	41	Sept.	22	Oct.	35	22	28⅝	.....	—12⅜	+ 6⅝
Independent Oil & Gas	30⅛	18¼	25¼	24⅜	35	39⅜	May	17¾	Oct.	27⅞	17¾	24⅞	—10⅛	—14½	+ 7⅛
Indian Refining	8	8½	9¾	23⅞	29⅞	53	Aug.	13⅛	Oct.	29½	13⅜	21	— 8⅞	—32	+ 7⅞
Intercontinental Petroleum	....	....	1⅞	1⅛	2⅛	2⅞	May	⅜	Nov.	1⅞	⅜	⅞	— 1¼	— 2	+ ½
International Petroleum	32⅜	28⅝	37	39	50¼	29⅜	Aug.	15	Oct.	26⅜	15	22	.....	— 7⅜	+ 7
Kirby Petroleum	1⅜	1⅜	1½	1¾	1⅝	3⅝	Jan.	1¼	Oct.	2⅜	1¼	1¾	— ⅜	— 2⅜	+ ½
Lago Oil & Transport	21½	26¾	33¾	31½	31	38⅜	June	16½	Nov.	30	16½	23	— 8	—15⅜	+ 6½
Leonard Oil & Development	8¼	8	6	6⅝	5⅛	6⅛	Mar.	2	Oct.	3	2	2⅛	— 3	— 4	+ ⅛
Lion Oil & Refining	24¾	23⅞	22½	27½	33	38⅞	May	18	Oct.	24⅞	18	22	—11	—16⅞	+ 4
Louisiana Oil Refg	17	11¾	10½	14⅜	14⅛	18	Jan.	7	Oct.	10⅝	7	10	— 4⅛	— 8	+ 3
Maracaibo Oil	18½	13½	16	15¾	16⅛	18½	Apr.	10	Nov.	12¾	10	10	— 6⅛	— 8½	0
Margay Oil	....	....	44½	37	32⅛	38½	Jan.	14	Nov.	17¾	14	15	—17⅛	—23½	+ 1
Mexico-Ohio Oil	....	....	....	5⅞	4	6⅜	Mar.	2½	Nov.	3⅛	2½	2⅞	— 1⅛	— 3½	+ ⅜
Mexican Seaboard Oil	7½	4⅞	5	25	65	69⅜	Jan.	9¼	Oct.	21½	9¼	18½	—46½	—50⅞	+ 9¼
Mid-Continent Petroleum	35⅜	30	29⅜	28⅞	37¾	39⅞	Jan.	22⅛	Nov.	31	22⅛	29⅜	— 8⅜	—10½	+ 7¼
Middle States Oil	1⅝	3	2⅜	5	4½	5⅛	Jan.	1	Oct.	2	1	1¼	— 3¼	— 3⅞	+ ¼
Mountain & Gulf	1¼	....	1⅜	4/5	1¼	1½	Jan.	¼	Nov.	¾	¼	¾	— ½	— ¾	+ ½
Mountain Producers	25⅜	23⅜	28⅜	22¾	20½	22⅞	Feb.	7	Oct.	9⅞	7	9⅞	—10⅝	—13	+ 2⅞
New Mexico & Arizona	12⅞	11¾	9½	8½	7½	9⅜	Mar.	2¼	Oct.	3½	2¼	3½	— 4	— 5⅞	+ 1¼
North Central Texas Oil	....	10½	10¾	12⅝	8½	18½	Aug.	6⅛	Nov.	11	6⅛	7½	— 1	—11	+ 1⅜
Pan American P. & T.	61½	53½	43¼	41	46¾	69	Aug.	40¼	Feb.	64	50	62¾	+16	— 6¼	+22½
do B stock	63⅝	54	44½	43	48⅞	69¼	Aug.	40½	Feb.	64½	50	62½	+13⅝	— 6¾	+22
Pandem Oil	7⅜	4¾	4¼	2¾	2¼	3½	Mar.	½	Oct.	1 1/16	½	⅝	— 1⅝	— 2⅞	+ ⅛
Panhandle Prod. & Refg	11½	8½	15⅞	19¼	12¼	15¼	Jan.	3	Nov.	7	3	5⅜	— 6⅞	— 9⅞	+ 2⅜
Pantepec Oil	....	10	10⅞	10½	10¼	10½	Jan.	2⅜	Nov.	5	2⅜	4	— 6¼	— 6½	+ 1⅝
Penn Mex Fuel	17	27½	37	40	37	44½	Feb.	20	Oct.	26½	20	20	—17	—24½	0
Phillips Petroleum	56	39½	41	37¼	45	47	Jan.	24¼	Nov.	38½	24¼	36	— 9	—11	+11¾
Pierce Petroleum	3⅛	4⅞	4⅛	3⅞	5⅜	5⅞	Jan.	½	Oct.	3⅝	½	2¾	— 2⅜	— 3⅛	+ 2¼
Plymouth Oil	....	....	....	....	28⅛	37	Oct.	22	July	30	23¼	30	+ 1⅞	— 7	+ 8
Prairie Oil & Gas	53	47⅝	49	48¾	64½	65⅝	Jan.	40½	Oct.	53½	40½	51⅞	—12⅝	—13½	+11⅜
Producers & Refiners	17⅝	25¼	25	24⅞	22⅞	25⅞	Jan.	4	Oct.	8¾	4	8¼	—14⅝	—17⅝	+ 4¼
Pure Oil	27½	26	26	22⅝	27	30¾	May	20	Nov.	26⅞	20	23¾	— 3¼	— 7	+ 3¾
Red Bank Oil	....	16	12	9⅛	10⅜	16	Mar.	9⅝	Oct.	15	9⅝	10	— ⅜	— 6	+ ⅜
Reiter-Foster Oil	14½	4¼	5⅛	7¾	6⅞	8½	Feb.	1⅛	Oct.	3⅜	1⅛	3⅛	— 3¾	— 5⅜	+ 2
Richfield Oil	....	....	27½	45	47½	49⅝	Jan.	24⅛	Oct.	33	24⅛	29¼	—18¼	—20⅜	+ 5⅛
Rio Grande Oil	....	....	....	....	37½	42½	Mar.	15	Oct.	25⅜	15	20⅝	—16⅞	—21⅞	+ 5⅝
Royal Dutch (N.Y. shares)	52¼	48¾	48	55⅛	54⅛	64	Sept.	43⅛	Oct.	57¾	43⅛	52⅞	— 1¼	—13⅛	+ 9¾
Ryan Consolidated	5	6	5	6½	10⅜	11	Jan.	3	Oct.	5	3	4⅝	— 5½	— 6⅜	+ 1⅝
Salt Creek Consolidated	7⅞	6⅜	5	6¼	5¾	5⅞	Jan.	1⅞	Nov.	2½	1⅞	2	— 3¾	— 3⅞	+ ⅛
Salt Creek Producers	31	27¾	27	27	25⅝	25⅞	Jan.	9	Nov.	12⅞	9	11⅝	—14	—14¼	+ 2⅝
Savoy Oil	4⅜	....	2	....	1⅝	2½	June	½	Aug.	9/16	9/16	9/16	— 1⅛	— 1⅛	+ 1/16
Shell Union Oil	29	26½	25⅞	27⅛	27¾	31¾	Apr.	19	Oct.	26	19	24	— 3¾	— 7¾	+ 5
Simms Petroleum	20⅜	15⅝	23⅞	20⅛	23¾	40½	Aug.	15	Nov.	26½	15	23½	— ¼	—17	+ 8½
Sinclair Consolidated	19⅝	16¼	20⅞	24¼	42⅛	45	Jan.	21	Nov.	31½	21	27⅞	—14¼	—17⅛	+ 6¾
Skelly Oil	35⅜	25⅞	27⅛	29⅞	35¼	46½	May	28	Oct.	35⅞	28	34½	— ⅞	—12⅜	+ 6⅛
Solar Refining	195	180	178	180	219½	50	Feb.	33	Nov.	35	33	33⅞	.....	—16⅛	+ ⅞
South Penn Oil	38	35⅛	38	45	65⅝	60¼	Apr.	35½	Oct.	45	35½	42	.....	—18¼	+ 6½
S. O. California	58¼	53	55⅞	57⅞	72	81⅞	May	51½	Oct.	70	51½	62	—10	—19⅞	+10½
S. O. Indiana	68½	66⅝	78	74¾	90⅜	63	Mar.	45	Oct.	56	45	53⅞	.....	— 9⅛	+ 8⅛
S. O. Kansas	19¾	16⅛	15¼	22¼	20¾	33¾	Oct.	18	Jan.	30⅝	19⅛	30	+ 9¼	— 3¾	+12
S. O. Kentucky	120	111⅞	124⅜	126	44⅝	46⅞	Oct.	29	Oct.	40½	29	37	— 7⅝	— 9⅞	+ 8
S. O. Nebraska	48	44	41⅞	41½	48⅞	50¼	May	40	Nov.	47	40	42	— 6⅞	— 8¼	+ 2
S. O. New Jersey	38⅞	36¼	39⅞	44	55	83	Sept.	48	Feb.	73⅜	50	65	+10	—18	+17
S. O. New York	32⅞	30	31¼	35⅜	45½	48⅛	Sept.	31¾	Nov.	40	31¾	35⅞	— 9⅝	—12¼	+ 4⅛
S. O. Ohio	370	73	79	72½	119¾	129	May	60	Oct.	98½	60	86	—33¾	—43	+26
Sun Oil	32	33	31⅞	42⅝	65	86⅜	Oct.	55½	Nov.	70	55½	69½	+ 4½	—16⅞	+14
Superior Oil	4⅝	4¼	3¼	6⅞	10	24	Aug.	5¼	Nov.	14½	5¼	8½	— 1½	—15½	+ 3¼
Swan Finch Oil	16	17½	17	22	18¾	18	Jan.	10	Oct.	11	10	10	— 8¾	— 8	0
The Texas Corp	57¼	47⅛	54⅜	58¾	67	71⅞	Sept.	50	Nov.	60½	50	56½	—10½	—15⅜	+ 6½
Texas Pacific Coal & Oil	15¾	15	14⅛	13⅞	18⅜	23⅞	Mar.	9½	Nov.	14⅜	9½	11⅝	— 6¾	—12¾	+ 2⅛
Texon Oil & Land	....	....	....	....	3 1/16	23	Jan.	7⅛	Oct.	15	7⅛	10½	.....	—12½	+ 3⅜
Tide Water Oil	27½	22½	22	23	37	40	June	14	Nov.	30	14	22⅝	—14⅞	—17⅜	+ 8⅛
Tide Water Associated	21¾	16½	17⅛	16⅝	21⅛	23½	June	10	Nov	16¾	10	13⅞	— 7¼	— 9⅝	+ 3⅞
Transcontinental Oil	4⅝	9	8¾	7⅞	12¾	15¼	Aug.	5⅛	Oct.	10⅝	5⅛	8½	— 3¾	— 6¾	+ 3⅜
Union Oil of California	55¼	41⅝	44	49⅝	50½	57	Sept.	42⅛	Nov.	51⅞	42⅛	46	— 4½	—11	+ 3⅞
Vacuum Oil	95¾	132	140½	74½	109¼	133¾	Mar.	75⅛	Oct.	115¾	75⅛	96⅝	—12⅜	—37⅛	+21⅛
Venezuela-Mexico	....	....	20	50	73	81⅛	Aug.	66	Feb.	77½	75	77½	+ 4½	— 3⅝	+11½
Venezuelan Petroleum	7	4⅝	5	5⅛	5⅞	6½	Jan.	1⅛	Nov.	3¼	1⅛	2⅜	— 3½	— 4⅛	+ 1¼
Warner Quinlan	26	26	31⅞	35½	39⅞	42⅞	Jan.	15	Oct.	26½	15	22⅝	—17¼	—20¼	+ 7⅝
White Eagle Oil & Refg	25¾	22⅝	20½	23	35⅝	38	Feb.	25	Oct.	33	25	30	— 5⅜	— 8	+ 5
Wilcox Oil & Gas	29½	22⅞	21½	19½	19	29¾	Feb.	12⅞	Nov.	19¼	12⅞	15¼	— 3¾	—14½	+ 2¾
Woodley Petroleum	6¾	6⅛	6	6½	6½	9⅛	Mar.	2	Nov.	4⅞	2	3⅝	— 2⅞	— 5½	+ 1⅝
Y Oil & Gas	....	....	2⅜	5⅛	4⅜	5⅜	Jan.	½	Nov.	1⅛	½	1⅛	— 3¼	— 4¼	+ 5/16

Note—Prices for 1929 of S. O. Indiana, Cities Service, Imperial, International Petroleum, Solar Refining, South Penn, and Texon Oil & Land are for new stock. The Dec. 31, 1928, prices are for stock before stock dividends and other capital alterations.

The main items on the Continental's program are vacuum stills, an increase in wax plant facilities, enlargement of barreling and packaging departments, doubling the grease plant, stabilizing equipment, and a large number of miscellaneous items.

The 1930 program of the Gulf companies calls for the expenditure of $75,000,000, said G. R. Nutty, president of the Gulf's refining and marketing subsidiaries. Approximately an equal sum has been spent this year for refinery construction, distributing facilities and production.

The Texas Corp. in October issued $100,000,000 debentures, proceeds from which are to be used for expansion work, it was announced at the time, although no details were revealed.

The Sun Oil Co. will spend $15,000,000 in construction or rebuilding of refineries, ships, pipe lines and distributing facilities, said J. Howard Pew.

"We have never curtailed operations or development on account of stock market depression," said J. C. Van Eck, president of the Shell Union Oil Corp., holding corporation for the Royal Dutch-Shell operations in the United States. "We expect to continue development along the same lines and on the same basis we have followed in the past.

"On account of the curtailment of production in the various fields, the outlook is much better than it was a year ago. I think it is too early to estimate the effect of stock deflation on the oil industry."

The stock market deflation will not interfere with the operations of the Phillips Petroleum Co., said Frank Phillips, its president. The company's 1930 program will be guided entirely by the requirements of the industry, Mr. Phillips added. He does not expect a lessening demand for products next year.

An optimistic chord was struck by the Phillips directors Nov. 25, when they increased the company's dividend rate from $1.50 to $2 a year and declared a 5 per cent stock dividend. If the company's earnings continued as good or better than at present, Mr. Phillips said he would recommend to the directors that an extra quarterly stock dividend be paid regularly.

In an interview granted in New York last week Mr. Phillips said this about the petroleum situation:

"The material decline in production of crude oil during the last 30 days, due to voluntary proration in California and the Mid-Continent area to current requirements, will stabilize the petroleum industry, conserve its resources, and improve its earnings.

"It is particularly significant that proration is voluntary, showing a whole-hearted cooperation and resulting in supply and demand being balanced for the first time in years. Another constructive factor is the unitization plan which is meeting with practically unanimous accord by both large and small companies. The American Petroleum Institute meeting at Chicago in December is expected to develop further constructive measures.

"It seems certain that the oil industry is rapidly reaching a better condition than at any time during recent years of overproduction."

An oil man who is familiar with both our industry and the stock market, but who declined to allow his name to be used, said:

"I CONSIDER the outlook for the oil industry next year very bright indeed. My belief is that gasoline demand will continue to increase at the normal rate of increase. I doubt that there will be any decline in the other major products due to the recent unpleasantness. It seems to me that the leading oil stocks, with a few exceptions, are selling below real value. The prices attained earlier this year were rather high in some of the Standard Oil stocks but in many of the Independent stocks they were not high in my opinion."

The chief executive of another prominent company, who was likewise reticent about being openly quoted but who is familiar with both the oil industry and Wall Street operations, said:

"I believe that the outlook for the industry during 1930 will be just what the leaders of the industry want to make it. I can see no reason why gasoline demand should not increase during 1930 for this reason: It is my firm conviction that the present administration is going to avoid, if possible that which Coolidge believed inevitable; namely, a slacking of general business, thereby greatly reducing the purchasing power of the American people.

"Owing to the recent smash in Wall Street, due partly to the fallacious yardstick that the bankers used in measuring potential values, as well as the international situation, it will be necessary for the administration to spend great sums, and, in addition, it will undoubtedly call upon the larger corporations to put some of their tremendous surplus cash in circulation before restoring the nation's purchasing power to a more or less normal level.

"As to whether this is an artificial correction, that will mend the void created by those that have gone 'broke,' or whether it is sound economics, is leading into a branch of high finance, upon which I know I am not confident to pass upon. This explanation, I believe, holds true for all basic industries.

"In regard to oil stock prices early this year, it is my belief that many were over-priced, and there were many that as yet have not sold high enough."

Asked whether speculative groups ran his company's stocks up and then down this man replied: "I wish to state most emphatically that it was. To my mind, the practice of speculators taking a stock and running it up and then dumping it, is most unsettling—not only to the stockholders but to the management as well."

In the opinion of George P. Whaley, president of the Vacuum Oil Co., the stock market deflation will not have any important effect on gasoline demand in 1930. The outlook for the industry as a whole appears to be excellent, Mr. Whaley said.

"I believe gasoline demand and consumption will continue to increase during 1930 at the normal rate and that stock market deflation will not materially influence the rate of increase," said E. D. Levy, president of the Pierce Petroleum Corp. "As to other major products, I feel that demand and consumption will be in step with gasoline."

K. R. Kingsbury, president of the Standard Oil Co. of California, reiterated his statement issued Oct. 29, the day of the panic in Wall Street. This statement was:

"I know of nothing in the present situation or in the future of the oil industry that justifies the extraordi-

24 Companies Show 27% Gain in Earnings

CLEVELAND, Nov. 26.—Reports of earnings of 24 oil companies for the first nine months of 1929 were 27.6 per cent larger than in the corresponding time of 1928. In some cases the nine-month earnings after all deductions were larger than total net profits in 1928. Comparisons are impossible in the cases of some companies because they do not set aside depletion and depreciation reserves and incime tax reserves until the end of the year.

The individual increases of the 24 companies and the total increases were as follows:

	9 mos. 1929	9 mos. 1928	% Change 1929 from 1928
Amerada Corp.	$2,613,299	$1,635,471	+ 59.7
American Rep.	1,311,715	903,851	+ 45.1
Associated Oil	5,312,222	5,548,872	— 4.2
Atlantic Ref.	13,687,000	11,908,987	+ 14.9
Barnsdall Corp.	5,721,706	2,401,461	+138.2
Beacon Oil	†869,386	†1,086,874	— 20.0
Houston Oil	1,251,630	1,099,426	+ 13.8
Indep. Oil & Gas.	5,097,503	2,138,973	+138.3
Louisiana Oil	†1,526,887	†1,137,133	+ 34.3
Mexican Seaboard	*24,818	*33,991	+ 26.9
Mid-Cont. Pet.	‡†10,879,647	‡†7,241,119	+ 50.2
Panhandle P. & R.	†129,874	*76,828	
Phillips Petroleum	‡15,029,588	‡12,366,133	+ 21.5
Pierce Petroleum	979,718	791,683	+ 23.7
Richfield Oil	6,472,340	5,455,194	+ 18.6
Shell Union Oil	†18,682,405	†15,433,352	+ 21.1
Simms Pet.	1,306,634	59,250	+2105.2
Skelly Oil	4,813,450	2,462,407	+ 95.4
Texas Pacific	‡1,572,457	‡1,272,939	+ 23.5
Tide Water Assoc.	9,865,235	10,451,365	+ 5.9
Tide Water Oil	5,344,468	7,117,302	+ 33.1
Transcontinental	†3,520,003	†1,348,032	+161.1
Union Oil	12,000,000	8,550,000	+ 40.0
White Eagle Oil	†1,636,350	†1,209,257	+ 35.3
Total	$129,594,699	$101,508,262	+ 27.6

†Before federal taxes. ‡Before reserves. *Loss.

nary depreciation in prices of oil stocks today. No new conditions have arisen threatening our company or, so far as I know, the industry. On the contrary, the prospect for effective conservation, which will result in balancing production with demand, is brighter today than it has been at any time."

It has been impossible to ascertain whether any great pools were organized to run up oil stocks and then dump them when the prices were high because groups that carry on such operations do not talk often. However, there are persistent rumors of the formation of a speculative group here and another one there and what they are doing.

When market prices crashed there were reports of formation of short selling pools among the bears but there was no way even for the exchanges to ascertain the truthfulness of these rumors until last week when New York Stock Exchange and New York Curb Market members were ordered to report the volume of stock borrowed and from whom, the volume of stock lent and to whom lent, and other details that was expected to curb the large volume of short selling among the bears.

An example of the magnitude of these operations was rumored in Cleveland banking circles last week. It was said that 225,000 shares of Cities Service were sold short in nine blocks of 25,000 shares each the day the stock was driven down to 20. Such a report cannot be verified but at one large bank the rumor was given credence.

With few exceptions the low levels of oil stock prices for 1929 were reached the last week in October or the first two weeks in November. While some stocks fell to their bottom prices for the year in the great crash of Oct. 24, perhaps the majority withstood that first shock pretty well and did not reach bottom until the Oct. 29 panic. A few were able to withstand the second great shock, but the weakness of the markets the first two weeks of November allowed many to sell at prices generally believed to be below their true values.

However, along in the second week of November the market gained strength and investors began to realize the many bargain stocks that were available. Gains continued last week and the closing prices Friday Nov. 22 showed many excellent recoveries.

Among some of the gains from the low points of the crash are the following:

Atlantic Refining 12⅝ points; Barnsdall 6½; Cities Service 10½; Cosden 38; Gulf 21; Houston 24½; Humble 16; Mexican Seaboard 9¼; Mid-Continent Petroleum 7¼; Pan American common 22½; Pan American B stock 22; Phillips 11¾; Prairie Oil & Gas 11⅜; Simms Petroleum 8½; Standard of California 10½; Standard of New Jersey 15; Standard of Ohio 26; Sun Oil 14; The Texas Corp. 6½, and Vacuum Oil 21½.

Even at the recovery prices Nov. 22 few stocks were as high as at the beginning of the year. A check of the 94 common oil stocks whose prices are tabulated in the accompanying table shows only a few that were selling that day at higher prices than the stocks commanded at the beginning of 1929.

The two Pan American common stocks were up 16 points for the voting common and 13⅝ points for the class B non-voting common. The rise in these stocks was influenced last summer by the offer of the Standard Oil Co. of Indiana to exchange its shares for those of Pan American and, although they were driven down sharply during the crash, they were able to stay almost 10 points above their low prices for the year attained in February.

Standard of New Jersey was selling Nov. 22 more than 10 points above its low for the year which also was reached in February. It fell to only two points above its February low but the reported order of the Rockefellers to buy 1,000,000 sharess at 50, the bottom price for the stock after the crash, was followed by a rally of 15 points.

Resumption of dividends enabled the Standard Oil Co. of Kansas to reach its high for the year in October and although the crash caused the stock to fall off more than 10 points it closed Nov. 22 9¼ points above its January low.

Sun Oil, which reached its year's high in October and its low in November in a fall of more than 30 points, rallied 14 points and closed Nov. 22 4½ points higher than the closing prices last Dec. 31.

Smaller companies that were able to sustain part of this year's gains were the Derby Oil & Refining Co., Plymouth Oil Co., and the Venezuela-Mexico Oil Co.

The Other Side of Ford's Statement

CLEVELAND, Nov. 25.—Men in our industry read last week the announcement by Henry Ford, as he left President Hoover's conference at Washington, that he was going to increase the wage scale paid workers in his factories.

Probably every newspaper in the country carried Ford's statement. What Ford did not include in his announcement, and what no newspaper, as far as is known, took the pains to check up on, was that the increase will partly come out of the pockets of the Ford dealers over the country.

When the prices on some Ford models were recently reduced $15, a daily business paper in Cleveland brings out, $13 out of that cut came out of the reduction in the gross commissions to dealers from 20 to 17½ per cent, a reduction amounting to one-eighth.

The article published in the Nov. 23 issue of Daily Metal Trade, entitled "Half-Truths are Dangerous," follows:

"We are going to increase the basic wage scale of our employes," blandly announced Henry Ford, leaving a White House conference with the President and industrial leaders of the nation.

Newspapers from coast to coast this morning carried the words of the motor king in blazing headlines, and business men, presumably were reassured.

But Mr. Ford did not tell how '29 model A's had been pressed upon his dealer organization in numbers in excess of immediate sales possibilities. Nor did he explain that sales prices had been reduced after these dealers had been forced to take their quotas and pay for them on the basis of the previous higher sales price.

Nor did he tell the President and the assembled industrial giants and the inquiring reporters that gross commissions to dealers had been reduced by one-eighth, the reduction being from 20 to 17½ per cent.

On a reduction in the retail price of $15, the dealer absorbs $13 and Mr. Ford $2.

Ford dealers and their employes engaged in selling and servicing comprise a total comparable with the number of workers engaged in building Ford automobiles. The cut in commissions represents the net profits and more to many of these dealers.

Isn't Mr. Ford robbing Peter to pay Paul?

Industry wants facts and is capable of coping with them. Coddling is dangerous and unnecessary, especially now.

Crew Levick Buys Stations

PHILADELPHIA, Nov. 23.—Crew Levick Co., subsidiary of the Cities Service Co., has acquired the Consolidated Service Stations Co. and Towco Filling Stations Co. which have stations in western Pennsylvania. The chain includes two stations in Oil City, three in Meadville, eight in Erie, one each in Conneaut Lake, Venango Borough and Saegertown, and several intermediate highway stations.

WATERBURY, Conn., Nov. 25.—An attractive service station with parking accommodations for 150 cars will be built here by the McElligott Oil Co., according to Edward McElligott. It will be erected on the site of the old church of Immaculate Conception. The company is prominent here as a coal and charcoal dealer and has been recently operating in the oil business.

Curtailed Buying After Stock Collapse Is Mostly State of Mind

By Amos Bradbury

NOT over 100,000 families in this country are out of purchasing for the time being because of losses in the stock market collapse, Amos Bradbury, well known writer on business subjects, tells in an article in the Nov. 7th issue of Printers' Ink entitled, "How Will They Think From Here."

That loss of buying power is not as bad as a strike in the steel district where all purchasing power stops, he points out. He goes on to show how business has ridden an even keel during periods of actual losses of income through unemployment, income from which purchases are made of products that keep the wheels of mass production turning.

This writer concludes, employment and general fundamental business conditions being sound, that any extent of curtailment of purchasing will come through a state of mind on the part of the buying public rather than any necessity for such curtailment. In other words, the answer to the question as to what of business for the future lies in the state of mind of each of us.

While this is a general business story, and has no mention of oil in it, it is an article every oil man should read because of its logical sizeup of present conditions.

COMING out on the suburban train last week, Tuesday evening—*the* Tuesday evening—was an interesting experience. To a person like myself who has not been particularly interested in getting rich quickly or trying to by means of fast movements in the Stock Exchange, it was interesting to discover the wrong course of thinking followed by some business men.

One could hear comments all around, dire rumors, pessimism, false economics. This man knew that twenty-nine Oriental rugs had been returned to a certain department store by people who had lost their winnings. Another man was sure that business was going to suffer for years to come. Another man had heard this or that.

While it is true that my conversation with the man in the same seat with me, and the comments overheard, took place just before the reassuring statement and actions of scores of reputable business leaders and men of the standing of John D. Rockefeller, Sr., they nevertheless indicate a state of mind which is too prevalent since the nightmare of last week. For when I got back in the country and listened to some of the statements made by Dr. Julius Klein, assistant secretary of the Department of Commerce, over the radio, I thought from his points on, and came to conclusions which I told some neighbors the next morning.

Now I make no claims at all to a sound knowledge of economics, but some of the homely ideas which came to me the next morning did have the result of keeping a few men from doing some foolish things and one of them suggested that they might be a good thing to write about this week. So here they are.

I was at Dave Bush's store last week Wednesday, when Sally Ireland came in to talk to him about photographs. She had seen him the week before and persuaded Dave that he ought to have some taken of his children to surprise his wife for Christmas. "Not a chance, Sally," he said, "I'm starting to economize."

"Don't you even want a photograph for Christmas?" she asked and Dave told her "no" and in very certain terms. Not he. He was going to start saving. Everybody ought to start saving because so much money had been lost in stocks and business was going to be bad.

After Sally had gone away, crestfallen, I told Dave I thought he was wrong. I pointed out that according to Dr. Klein, a very liberal estimate places at 1,000,000 the number of people who have been engaging in speculative activities. He said that even though the purchasing power of all of them had been weakened (and he didn't think that it had), nevertheless the buying power of less than 4 per cent of the families of the nation would be affected. I went one step further than that. Out of that million people there were certainly a considerable number who knew when to take a loss. In other words, they sold stock and retained profits although not the big profits they had on paper a short time back. It seems logical to me to believe that 20 per cent of the number of those speculating did just that. The local banker to whom I suggested the same thought later in the morning told me he thought it was nearer 25 per cent.

There is another 10 per cent who have always traded. It is in their blood. They are the ones who have been sitting around brokerage offices for the last year writing quotations on little bits of paper. When they buy they usually buy in 10-share lots. Some of them have lost a little money. Most of them have gone back to work. Many of them are reopening their little stores, according to the real estate brokers. Many have been hurt severely.

There is at least another 10 per cent who always hold their stock. Dave Bush is one of them himself. His losses are all on paper and yet he was turning down a $22.50 expenditure. I told him how foolish he was.

Over on the left-hand side of his store there were a lot of books piled up. There was a Well's "Outline of History," complete and unabridged in 1200 pages. When it first came out in a slightly better edition it sold for $5. There it was, big as life, marked $1. Yes, as I pointed out to Dave, nobody was rushing around tearing his hair because he could buy a book for $1 that he had paid $5 for three months ago, and I tried to show him how foolish it would be if everybody acted toward merchandise in that way. And I showed him that on most of his stocks he was getting his interest, was going to hold them and was going to eat three meals a day. By the time Dave, Jr., inherits the stock his father has accumulated they will probably be higher than ever.

There was another book there, "Where the Blue Begins," that excellent book by Christopher Morley, marked plainly, originally $3, this edition $1. Very little, if any, of Dave's financial stock has gone down in that proportion, and, as I pointed out to him, so good a book is certainly worth $3 of anybody's money. Nobody who paid that for it when it first came out was defrauded, nor is anybody kicking because another man can buy it in a slightly different edition at one-third the price today.

All right; that gives us 25 per cent who still keep some profits, 10 per cent who trade and didn't lose a lot, 10 per cent who hold on through thick and thin, who were holding on in 1907, and who are holding on now and who will be holding on ten years from now. At least another 5 per cent of the million must be either brokers or real speculators who are rich today and not quite so rich tomorrow, who lose and win, but always seem to manage to live. The brokers aren't broke and some of the gamblers aren't. That takes care of 50 per cent of the million who will be buying things right along.

From talks I have had with many well informed men it is hard to believe that more than 10 per cent out of the remaining 50 per cent have been hit so badly that they are embarrassed financially. If one reads the papers hurriedly one would believe that George Baker lost more money than anyone in the United States. He comes in the "never sell" class and if he decides to economize any it isn't going to affect any factory. Of those who have been hit some have lost as much as $2000, some a great deal more. But no one to whom I have talked believes that more than 100,000 families are out of purchasing for the time being. *That loss of buying power is not as bad as a strike in the steel district where all purchasing power stops.*

If one-sixth of the men employed in the pig iron and steel industry went on strike, there would result an actual, real loss in purchasing power of $800,000 a day or $24,000,000 a month. A three-months' strike would result in an actual loss of $72,000,000. John Skelton Williams, former Federal Reserve Board member pointed out in 1921 that the unemployment then current had cut $10,000,000,000 from purchasing power.

Those are real and actual losses and yet business survived. And those losses were loss of income from which purchases are made of products that keep the wheels of mass production turning.

Big purchasing and extravagant buying of high-priced merchandise by people who aren't accustomed to luxuries is natural when big winnings are the rule in the stock market, but quantity sales are, generally speaking, unaffected by the somewhat diminished purchasing power of the less than 100,000 families who have been hit by the crash. Some of the worst hit have jobs which enable them to go on eating their food, buying their clothes and purchasing from income the things which advertising has made them want. The vast majority of the American people who buy goods on the installment plan, whether it is automobiles, real estate, radio or household goods, do so out of anticipation of regular income and not from speculative transactions.

There is only one thing that can hurt business and that is the way a man thinks. If he is thinking wrong, as Dave Bush was, about not buying something that he had decided to get and which was well within his means, he is going to hurt business. If management draws in its horns, stops going ahead in its normal way, or lays off men or makes drastic cuts in wages, it is going to hurt business. But it will be because of wrong thought.

The manager of an industrial corporation who sees straight, and most of them do, sees in the future an era of more easy money for legitimate business expansion. The best informed men in the country have looked into the matter and believe that business is fundamentally sound. If the millions of dollars that have been employed in speculation come back even slightly diminished, for business uses, an era of expansion should come on which will assure every man willing to work a good wage, a sound future and a period of sane, progress in American industry.

It is entirely possible to believe that the amount of money coming back into more legitimate business will more than counter-balance the loss, mostly in paper profits, which some writers have been playing up so prominently in the recent past. Employment is sound and so long as progressive sound management looks calmly ahead to a period of normal growth, the prospects, not only for increased sales, but even for increased purchasing power are viewed as being bright by some of the most representative business men in America.

Pacific Coast Geologists In Annual Meeting

SAN FRANCISCO, Nov. 22.—A two-day session of the Pacific Coast Section of the American Association of Petroleum Geologists, held here Nov. 21 and 22, brought forth many valuable papers and much interesting discussion on problems of interest to Pacific Coast geologists. Upwards of 150 members were in attendance at all four sessions. Social activities included a dinner dance at the Palace Hotel and several group luncheons. The annual California-Stanford football game provided an added attraction that brought many from remote points.

The technical program included papers on a wide variety of topics, though a symposium on the lithology, age and micro-fossil content of the California petroleum source rocks provided the most important group. Among these, the following papers were received with interest: "Age of the Uppermost Signal Hill Fauna," by W. Farrand and A. J. Tieje; "The McLure Shale of the Coalinga Region," by G. Henry; "The Miocene Brown Shale of the Kettleman Hills, California," by H. G. Schenck; "Micro-organisms of the Marine Siliceous Shales of California" by G. D. Hanna; "The Topango Canyon Diatom Flora," by K. E. Lohman; "Sandstone Lenses in the Maricopa Shale," by L. N. Waterfall; "The Fauna of the Kreyenhagen Shale," by F. von Estorff; "The Foraminfera of the Reliz Canyon Monterey Shale," by R. Kleinpell; "Simplification of Monterey Shale," by F. S. Hudson; and "Some Problems of the Monterey Shale," by R. D. Reed.

Another group of papers dealing largely with the tectonics of different localities, included the following: "Recurrent Movements on Palomas Canyon Fault, Los Angeles County, Cal.", by G. H. White; "Geology of Santa Rosa Island, Santa Barbara County, California," by B. Seymour; "Sandstone Dikes as Conduits for Oil Migration through Shales," by O. P. Jenkins; "Some Features of the Coastal Region of Santa Barbara County, California," by W. E. James; "Relationship of Vulcanism to Deposition of Siliceous Shale," by N. L. Taliaferro.

Only one paper touched on problems of particular interest to petroleum engineers: that by Mr. G. A. Macready on "Orientation of Cores." Most of these papers will eventually be printed in the A. A. P. G. monthly "Bulletin," and some of them will probably be presented again at the March, 1930, meeting of the national organization in New Orleans.

In a short business session, the Pacific Coast Section pledged its support to the development of a new geologic map of California now being prepared by the State Division of Mines, Department of Natural Resources, and appointment of a committee was authorized to cooperate with state officials in fostering other geologic research and field studies.

Election of officers for the coming year resulted in the election of Ralph J. Reed as section chairman, H. K. Armstrong as secretary-treasurer and Frank Morgan as a new member of the business committee. Outgoing chairman and secretary-treasurer are Earl Noble and E. M. Butterworth, respectively. Mr. Morgan succeeds N. L. Taliaferro on the business committee.

Gets Exclusive Rights To Bergius Process

CLEVELAND, Nov. 25.—Standard Oil Co. of New Jersey announced Nov. 23 that an agreement has been reached between that company and the I. G. Farbenindustrie interests of Germany by which a company is to be formed for the development of the latter company's coal hydrogenation process for the manufacture of petroleum products.

The new company is to be owned jointly by the parent organizations, and is to be under the direct management of Standard of New Jersey.

This agreement is the result of a preliminary contract under which the parties have been cooperating in experimental and development work on the process during the last three years. The new company will have exclusive rights to the development of the process throughout the world outside of Germany where a marketing outlet for products is provided, which will safeguard the interests of the I. G. Farbenindustrie.

The new contract insures that the exploitation of the Bergius coal liquefaction process will be carried out under the control of American interests and directed by American technologists in cooperation with the originators of the process.

The Farbenindustrie's process synthesizes petroleum hydrocarbons from coal by hydrogenation, employing heat and pressure. It was developed by Dr. Friederich Bergius of Germany and his associates, and announced to the world in a paper presented before the International Conference on Bituminous Coal at Pittsburgh, on Nov. 15, 1926.

Gasoline and other products of the process are now being marketed throughout a large part of Germany and, in the event of a serious diminution of the world's oil production the manufacture of liquid motor fuel from coal may solve the problem of an adequate gasoline supply.

Study Use of Crackers In Gas Manufacture

CHICAGO, Nov. 26.—Possibilities of fitting oil cracking operations into the manufacture of illuminating gas, as well as motor fuel, appear to be developing not only in this country, but abroad.

This is indicated by recent visits of two foreign technologists to the offices and laboratories of the Universal Oil Products Co. at Chicago, according to Paul Truesdell of that company.

One of these visitors is Prof. E. F. Armstrong, a director of the South Metropolitan Gas Co. of London, and the other is Prof. Walter Muller, head of the Engineering Economics department of the University of Chile at Santiago, and also chief engineer of the leading gas company of Chile.

Both these men are studying the possibilities of using cracking equipment to make high grade motor fuel on one hand and at the same time enrich manufactured gas through the utilization of the fixed gases from the cracking stills.

At the request of E. A. Dieterle, chairman of the gas section of the Western Society of Engineers, Chicago, Doctors J. C. Morrell and Gustav Egloff of the Universal Oil Products Co. are preparing a paper on the possibilities of combining cracking operations with gas manufacture, to be presented Dec. 9.

Rail Rate Cut Proposed Into Connecticut

Washington, Nov. 25.—A tentative plan for reducing all-rail freight rates from refinery points in eastern Pennsylvania and New Jersey to Connecticut has been proposed to the Interstate Commerce Commission by Arthur Ketler, its attorney, who has investigated the complaint of the state of Connecticut that rates on refined petroleum products and fuel oil are unreasonably high.

The Sun Oil Co. backed the complaint of the state. The Beacon Oil Co. and the Mexican Petroleum Refining Co. also declared themselves in on the case but did not disclose their thoughts about the issue.

Kettler has recommended that the rates on refined products, now generally full fifth class, be reduced to the basis of 90 per cent of that class. That is the basis of refined oil rates in Ohio, Indiana, Michigan and Illinois. If his proposal is adopted rates all over New England will be forced down.

Kettler said rates on fuel oil should be 80 per cent of those on refined products. That is the basis of fuel oil rates west of the Mississippi.

At present, according to Kettler, 80 per cent of petroleum products and fuel oil move into Connecticut by water. Reduction in the rail rates, therefore, might have some effect on the volume moving by water. The proposed basis would reduce the present 30-cent commodity rate from Bayonne to New London to 29 cents and cut the 31-cent rate from Marcus Hook to 29 cents. The existing rates to New London are a little below fifth class.

The largest change would be made in a 27-cent fifth class rate from both Bayonne and Marcus Hook, which is now applicable to Ansonia, Bridgeport, Danbury, Hartford, New Britain, New Haven, Waterbury and a score of other industrial points in Connecticut. It would come to 24 cents per 100 pounds.

American Petroleum Institute report on refinery operations in the United States for the week ended Nov. 23, compared with the week ended Nov. 16

Districts	Per Cent of Capacity Reporting	Daily Av. Crude Run to Stills Wk. Ended 11-23 (Barrels)	Daily Av. Crude Run to Stills Wk. Ended 11-16 (Barrels)	Per Cent of Reporting Capacity Operated Wk. Ended 11-23	Per Cent of Reporting Capacity Operated Wk. Ended 11-16	Stocks Reported in Thousands of Barrels: Gasoline Stocks Nov. 23	Gasoline Stocks Nov. 16	Gas & Fuel Oil Stocks Nov. 23	Gas & Fuel Oil Stocks Nov. 16
East Coast	100.0	499,300	504,300	82.4	83.3	4,605	4,627	8,760	8,740
Appalachian	86.0	81,900	79,800	74.3	69.2	876	839	782	768
Ind.-Ill.-Ky.	98.3	306,900	309,300	86.7	87.5	4,252	4,512	3,915	3,760
Okla.-Kans., Mo.	89.0	286,800	303,200	69.7	74.3	2,634	2,464	3,943	3,939
Texas	91.1	558,100	570,200	78.9	81.8	5,627	5,382	14,645	14,262
La.-Ark.	97.1	190,200	179,700	65.1	62.8	1,719	1,692	5,228	5,100
Rocky Mountain	93.4	61,000	58,700	43.9	42.4	1,803	1,737	992	1,007
California	99.3	664,900	653,700	74.6	73.4	14,289	14,045	109,171	109,520
Total U. S.	95.4	2,649,100	2,655,900	75.5	76.1	35,805	35,298	147,436	147,096
Texas (Gulf Coast)	100.0	440,100	449,100	83.6	85.3	4,724	4,546	11,255	10,954
La. (Gulf Coast)	100.0	132,800	136,600	74.8	77.0	1,506	1,464	4,292	4,328

Kansas Tax Commission Asks Higher Oil Rates

(By Telegraph)

TULSA, Nov. 26.—The Kansas tax code commission appointed early this year by Governor Reed has completed its work and its report is being placed in the hands of members of the legislature. It is understood that recommendation is made for enactment of a 2 per cent gross production tax on oil which would not be in lieu of ad valorem taxes on oil properties. The Governor has publicly said that he will favor an additional one cent tax on gasoline.

Members of the Legislature are being asked to study the report and signify whether a special session should be called to consider the proposed legislation. It is also understood that the commission recommends a state income tax to apply to both individuals and corporations.

U. S. Court Upholds Calif. Gas Tax

(By Telegraph)

WASHINGTON, Nov. 25.—The Supreme Court of the United States by Associate Justice McReynolds, today upheld the validity of California's gasoline law imposing a tax of three cents a gallon to the extent of holding that it could not be attacked, collaterally, on the ground that that law as equivalent to imposing a toll upon highways that had received federal aid.

It upheld the federal court for the northern district of California in its dismissal of George B. Williams et al. vs. Ray L. Riley, state controller of California, a suit brought by Williams and other motor vehicle users. Williams and his associates went at the thing on the ground that the California law was in conflict with the federal highway aid act and the constitution of the United States. McReynolds said that the statute could not be attacked in that way by users of the highways.

The court also upheld the California statute imposing a 5 per cent tax upon the gross receipts of common carriers by motor trucks challenged in Bekins Van Lines, Inc. et al. vs. Ray L. Riley, State controller. The court said the state had a right to make a reasonable classification of vehicles for the purpose of imposing taxes.

Rebuilding Gasoline Plants

CLEVELAND, Nov. 25.—Natural gasoline plants of the Equitable Gas Co. of Pittsburgh and the Salem Gasoline Co. of Salem, W. Va., are being rebuilt by the Burrell-Mase Engineering Co. of Pittsburgh.

Correction

On page 65 of the Nov. 13 issue appeared a photograph showing an arc welder at work in a large tank. The photograph was described as being a view of "arc welding a tank floor." As a matter of fact the photograph shows the welding of a Wiggins floating roof inside a tank.

Atlantic Pipe Line Files Tariff in Texas

WASHINGTON, Nov. 25.—Official evidence that the Atlantic Pipe Line Co. has entered the field as a common carrier of crude petroleum has been placed before the Interstate Commerce Commission by the filing of a freight tariff by that company, denominated Atlantic Pipe Line Co. I.C.C. No. 1, operative Dec. 18.

The tariff describes itself as, "Local pipe line tariff applying on crude petroleum oil between points in Texas." It was filed by R. W. Howe, vice president of the company with offices at Dallas.

No notice in respect to the company has been received by the regulating body in any form other than the tariff. The commission, however, will take notice of the tariff by advising the company that it is expected to make monthly reports of its operations in the form and manner required by the law and the regulations thereunder.

The tariff names 25,000 barrels as the minimum shipment and carries the customary regulations. The crude, to be acceptable for transportation, must be free of water and sediment and the shipper must have made arrangements for taking the crude from the pipe line company.

The tariff names a rate of 15 cents per barrel from Winkler Station to Midland, including the gathering charge of 10 cents at Winkler. It names a rate of 40 cents from Midland to Beaumont, Magpetco, Smith's Bluff, Talpa and Atreco and a gathering charge of 20 cents at and near Talpa.

Raymond R. Russell, head of the Russell Oil Co., San Antonio, takes an active part in marketing affairs of the Alamo city. He is a vice president of the San Antonio Petroleum Board of Trade, affiliated with the Texas Petroleum Marketers Association

S. O. New Jersey Seeks Anglo-American Oil

CLEVELAND, Nov. 26.—Consolidation of the Anglo-American Oil Co., Ltd., and the Standard Oil Export Corp., owned jointly by the Standard Oil Co. of New Jersey, Standard Oil Co. of Louisiana, Carter Oil Co., and Humble Oil & Refining Co., is being sought by the Standard Oil Co. (N. J.), through an offer of one share of 5 per cent Standard Export $100 preferred stock for 5 5/9 shares of Anglo-American, par one pound each, either voting or non-voting shares.

Anglo-American was the British subsidiary of the old Standard Oil Co. of New Jersey and was one of the units set aside in the dissolution. It has been only a marketing company which has been a disadvantage, according to a letter F. E. Powell, chairman of the board, has addressed to stockholders.

Because the Anglo-American operates abroad, it is expected there will be no objection to the merger under the dissolution decree. The Standard Export was organized about a year ago to represent the New Jersey company's interests in the Export Petroleum Association, the joint export body authorized under the Webb-Pomerene act of 1918.

The exchange offer holds until Jan. 31, 1930, but may be extended to Feb. 28 should more than half but less than two-thirds of the stock be deposited. Fractional shares of Standard Export preferred will not be issued, it was announced but Anglo-American shares not included in blocks of 5 5/9 shares will be bought on a basis of $18 a share.

The Standard Export preferred is callable at 110 on or after Dec. 31, 1935. D. L. Harper is president of the company.

Cosden Buys Detroit Chain

DETROIT, Nov. 23.—Cosden Oil Co. has bought the Regal Petroleum Co. which has 26 service stations in Detroit.

Oklahoma Operators Plan to Keep Alive Proration Program

TULSA, Nov. 23

OKLAHOMA CITY operators on Nov. 21 took another look at their problem. Meeting in Tulsa primarily to decide on the manner of prorating production through December they went a step farther and agreed that something must be done to hold down the field after Jan. 1, when the present proration order of the state corporation commission expires.

They formally asked the proration committee of the Mid-Continent Oil & Gas Association to meet and study the situation from a state-wide standpoint, including the potential supply and the demand for Oklahoma crude oil and to call a general meeting of Oklahoma operators for Dec. 10. The Oklahoma City operators, meanwhile, will draft their own proposal on continuance of their proration, which will be subject as to amount to the decision reached in the general meeting.

As the state-wide proration also terminates Jan. 1, it is probable that before that day comes the corporation commission will be asked to issue a new order, limiting state production to some figure. The present maximum for the state is 660,000 barrels daily.

State Umpire Ray M. Collins, asked by the operators for his opinion as to the probable decline by Jan. 1 said he thought there would be very little in fields outside of Oklahoma City, taken as an over-all proposition. A number of wells have been drilled to the top of the sand in flush areas of the Seminole district and if these are released for production when the present order expires production would promptly jump to 800,000 barrels daily or more. He said that the basis for proration would have to be worked out with the buying agencies, inquiring of them what is the probable demand during the first three months of 1930.

Otto Bradford, umpire in the Oklahoma City pool, said that new production in sight for that field, to be opened Jan. 1, amounts to 90,000 barrels daily. The present potential of the field, counting the wells not permitted to produce, is around 200,000 barrels daily. Pipe line outlet, with the two lines now building, will soon total 100,000 barrels daily.

Oklahoma City operators voted to continue their "A" and "B" well classification during December but to alternate them five days open and five closed. The plan during November started with one group open four days, then six days for each group with some days when both were open at the same time.

It was voted to impose on drilling wells started after Jan. 1 and during the term of proration a delay in time of 64 days. That was the "pyramided" penalties taken by wells which were started after the first shut-down came in the Oklahoma City field, Sept. 12. It includes the seven days cementing time.

It was pointed out that it was unfair to keep on accumulating penalties against drilling wells indefinitely, as a well started Dec. 15 would not be allowed to produce until next October and a well started in June next "never would get in," as Wirt Franklin put it.

On the morning of the meeting President William N. Davis, of the Mid-Continent Oil & Gas Association, issued a statement urging the continuation of proration effort after the present state order expires. He praised the spirit that has existed among operators but warned against over-optimism.

"I am beginning to hear on every hand comments on the fact that oil is being withdrawn from storage," said Mr. Davis. "This is probably true in some areas and as to certain companies. I have no definite figures but I have sufficient information to convince me that such drafts as are being made are altogether trifling compared either with the enormous and entirely unnecessary amounts of crude in storage or with the amount of additional crude production which could be thrown on the market at any time.

"For many years the rank and file of the oil producers has looked upon drafts on storage as the forerunner of higher prices for crude. In my opinion there is grave danger that there may be so much comment on the reduction of storage and the balanced condition of the industry as to create an unjustifiable spirit of optimism which will weaken the unanimous support which the industry is giving to the curtailment program.

"The existing proration agreements have time limits, which before long will begin to expire, starting in Kansas some time next month and in Oklahoma Jan. 1. It will be quite as essential at that time, and perhaps even more important than it was when the agreements were made, that the curtailment and proration programs be continued, as there will be the customary seasonal reduced demand for crude during the first quarter of the year, amounting, I believe, to some 200,000 barrels a day for the United States.

"If the impression should become prevalent in the industry that we have not only balanced supply and demand but are making important drafts on stocks, without a corresponding appreciation of the fact that to maintain the balanced condition, potential production must continue to be restrained in amounts far in excess of the current reduction in stocks, there may be difficulty in securing the unanimity of action which must prevail at the expiration of the present proration agreements."

In Oklahoma and Kansas proration continues to hold production to the desired levels—in Oklahoma to under 660,000 barrels, the maximum fixed by the state corporation commission—and in Kansas to around the 50 per cent of the Sedgwick county's potential. During the past week the Oklahoma fields under proration were estimated to have produced the following daily amounts:

Pool	Week End Nov. 23	Week End Nov.16
Searight	9,430	10,195
Seminole	25,325	26,335
East Seminole	4,485	4,200
Bowlegs	25,500	25,955
Earlsboro*	61,420	63,935
Little River**	67,550	70,635
Carr City	10,070	10,380
Maud	8,950	9,775
Mission	15,745	16,875
St. Louis	51,795	49,635
Pearson	800	895
Asher	4,320	4,575
Sasakwa	8,650	11,740
Oklahoma City	64,140	57,685
Allen	20,540	20,275
Logan county	15,660	15,810
	394,380	398,630
Total for state	642,380	645,250
Kansas total	110,265	
Sedgwick county	22,900	

*Includes East Earlsboro, 25,320.
**Includes East Little River, 22,740.

Colombian Government Seeks to Be Fair

TULSA, Nov. 23.—Only a few minor points remain to be settled to make the new Colombian oil laws equitable to all, Dr. H. Foster Bain, secretary of the American Institute of Mining and Metallurgical Engineers, told a joint meeting of the Tulsa division of that society and the Tulsa Geological Society, Nov. 18.

It was Dr. Bain's opinion that there should be less trouble in the future in Colombia than in any other foreign country. He gained the opinion on his trip that the government is sincere in its effort to be fair to outside capital in drafting new laws governing oil operations. Recently Dr. Bain was a member of an international commission brought to Colombia to assist in framing the petroleum laws.

Review of Late Production News

DAILY average production in the country gained 13,250 barrels to 2,633,250 barrels the week ended Nov. 23, according to the American Petroleum Institute. Oklahoma output was on a steady basis, showing a decline of but 2900 barrels from the previous week. California output gained 25,000 barrels on daily average.

Crude oil imports were at the rate of 258,300 barrels daily average, a decrease of 28,129 barrels from the previous week. Total new crude supply was at 2,891,550 barrels the week ended Nov. 23, compared with 2,906,429 barrels the previous week.

The largest change in any individual field was at Santa Fe Springs where output gained 10,000 barrels on daily average. Seal Beach and Elwood Goleta fields each gained 7000 barrels and Ventura Avenue 5000 barrels.

Oklahoma City field showed the largest change in Oklahoma, it gaining 6450 barrels. St. Louis pool gained 2400 barrels. Little River and Sasakwa each fell off 3100 barrels, and Earlsboro 2550 barrels.

Gray county in the Texas Panhandle gained 3200 barrels.

Oklahoma-Kansas

TWO new wells, both of them producing from a sand extended the Oklahoma City pool a half mile to the south. The fact that they are producing from what is believed to be the detrital zone is thought to indicate that the southern limit to the Siliceous lime area lies to the north of these wells and has been found.

In Kansas chief interest centered around the Voshell pool of southern McPherson county. A new well was completed in the pool. It is good for about 385 barrels per day on the swab. The discovery well is taking its discovery rights of 35 days full production, and is swabbing 1120 barrels per day. A meeting of operators is set for Dec. 10 to determine future restrictions which may be placed on the development.

The extension of the four well pool just west of Borger in Hutchinson county, and the spread of the Finley pool of Gray county one half mile to the northeast, were the outstanding developments of the Texas Panhandle.

Texas, New Mexico, Louisiana

REFUSAL so far of L. C. Turman of Fort Worth to enter into a prorating program for the Darst Creek field of the Luling fault zone, central south Texas, is the stumbling block now confronting operators in that territory. Turman holds a contract with Grayburg Oil Co., of San Antonio, to deliver 500,000 barrels of Darst Creek crude, when, if and as produced from a 17-acre tract he owns there.

Current production in this country by pools is found on page 113.

Other operators in the field are in agreement on a prorating program, but Turman has applied to the railroad commission for permission to drill 11 tests on his property. Both Turman and the Grayburg company are said to take the position the contract cannot be abrogated. The proposed prorating program would be effective after Jan. 1, 1930, under the Yates field plan, and work will continue to bring such a system into operation.

West Texas production under prorating practice averaged approximately 367,500 barrels daily the first half of November. About 2500 barrels additional was exploited daily in the southeastern New Mexico division of the Permian salt basin geological province. Trunk pipeline deliveries from the territory averaged approximately 326,000 barrels daily as compared with 430,000 barrels daily capacity. By the middle of November, runs to West Texas skimming plant refiners had been reduced from 42,500 barrels daily, early in the month, to approximately 32,700 barrels daily. Tank car shipments of crude averaged approximately 14,000 barrels daily.

California

WITH the second two-week period of curtailment under way in California, it was estimated that the daily average production for week ending November 23 was 695,000 barrels. This is an increase of 17,800 barrels over the estimate for the previous week.

New completions at Santa Fe Springs, at the close of the first two-week period accounted for nearly 10,000 barrels of the increase. Tideland completions at Elwood boosted the daily output for that field over 3000 barrels, and new additions at Seal Beach raised the output there about 5000 barrels to give an average for the week of 29,000 barrels.

Operators in the flush fields are making every effort to reduce production so as to avert another cut in crude oil prices.

Wildcatting is reaching a place of importance in California fields, as operators endeavor to discover oil reserves in promising areas.

Operators at Elwood are pushing the drill on their tideland permits and even though present producing wells are being beaned back to help in curtailment measures, it will be difficult to keep the daily output below 30,000 barrels daily.

Experts are withholding judgment as to the potentialities of Kettleman Hills until more wells have been completed or at least taken to the top of the oil sand.

Wyoming, Montana

CARTER Oil Co. has abandoned its wildcat well on the Six Shooter anticline in Montana and announces that it will drill another test in the spring. A gas pipe line is being laid from the discovery well in Red Coulee field, on the Montana-Alberta border to the twin towns of Coutts and Sweetgrass; Montana-Dakota Power Co. has started surveying its gas line from Cabin Creek field, southwestern Montana, to Williston, N. D. Next year it will lay a line to Williston, and one to Bismarck.

Interests identified with the Western Public Service Corp. (Ohio Oil Co.) have asked for a gas franchise from the towns of Provo, Utah, and Pocatello, Ida. These lines will branch from the Wyoming-Utah line completed by the Western Public Service people this year. Mountain Fuel Supply Co., operating subsidiary of the Ohio, has shut down several of its wildcat wells in southwestern Wyoming and northwestern Colorado for the winter. Federal government is apparently claiming section 36 in the Elk Basin field, northern Wyoming, having recently granted an individual prospector's permit to it.

Public Lands Leasing Policy, 'Gas' Taxes Talked by Rocky Mountain Oil Men

By A. J. Hazlett

CASPER, Wyo., Nov. 22

DISCUSSION at the meetings of three oil organizations of the Rocky Mountain territory here Nov. 20 and 21 crystallized in the following resolutions:

President Hoover and Secretary Wilbur of the Department of the Interior were called upon to modify Executive Order No. 338 withdrawing public lands from exploitation for oil and gas resources.

State legislatures in the Rocky Mountain territory were asked to pass laws permitting the leasing of state lands for an indefinite period, also requesting that more than 640 acres be leased in one unit and that rentals be reduced.

A resolution was also adopted requesting the state to fix the maximum amount of the gasoline tax at three cents a gallon, to insist that all revenue derived from the gasoline taxes be applied to highway construction and maintenance and endorsing the use of road oil in building secondary highway systems.

The assembling of the oil men in Casper was really caused by the calling of three conventions; of the Rocky Mountain Oil and Gas Association, of the Rocky Mountain branch of the American Petroleum Institute Division of Development and Production Engineering and of the Rocky Mountain Division Petroleum Section, of the National Safety Council.

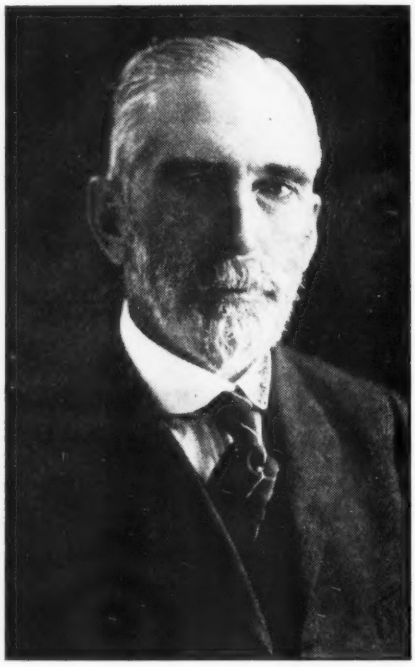
The meetings were held in the Masonic temple in Casper, the Oil and Gas Association taking up part of the time, the Production Engineers part of the time, and the National Safety Council representatives functioning at the luncheon hours both days.

Before adjoining, the Rocky Mountain Oil and Gas Association elected the following officers: Former Governor B. B. Brooks, selected president; John McFadyen, vice president, Ohio Oil Co., first vice president; E. B. Coolidge, second vice president; D. W. Greenburg, secretary; C. B. Richardson, treasurer.

The new board of directors is as follows: B. B. Brooks, John McFadyen, R. S. Shannon, A. G. Dana, C. B. Richardson, F. B. Coolidge, J. C. Howard, A. R. Wilson, R. W. Loucks, R. S. Ellison, R. B. Leggett, P. J. Sullivan, M. T. Rathvon, H. H. Schwartz, A. D. Aitken and Charles Orchard.

First session of the Rocky Mountain Oil & Gas Association was held Wednesday morning. Governor Brooks, presiding, stated the object and gave a brief history of the organization, what it has accomplished in the past and what it hoped to accomplish in the future.

"Public Land Problems," by R. D. Hawley, general counsel for the Continental Oil Co., was the first paper. It went into the history of the public land question from the discovery of America to the present oil conservation policy of the Hoover administration. The paper will be published by the association, and copies sent to executives in Washington and representatives in Congress.



Former Governor of Wyoming B. B. Brooks, reelected president of the Rocky Mountain Oil & Gas Association

Discussion on Mr. Hawley's paper was led by Judge A. C. Campbell of Cheyenne, who advocated necessary legislation in Wyoming and constitutional changes, if necessary, looking toward a longer period of state leases, a reduction in charges, and the leasing of land in larger units than 640 acres.

Dr. A. H. Diggs, director of research, Standard Oil Co. of Indiana, at Casper, presented a paper on "Oiled Roads in the Inter-mountain Region." He predicted a rapid increase in the use of road oil for highway construction. C. H. Bowman, district engineer of the Wyoming Highway Department, gave a history of the use of road oil in highway construction in Wyoming. He stated that the low cost and excellent results obtained by the state in the construction and maintenance of highways was most satisfactory, and that it would be the policy of the administration, in his opinion, to make a greater use of road oil in highway construction in the future, especially on secondary roads.

Speakers at the Safety Counsel luncheon were R. S. Ellison, vice president of the Midwest Refining Co., and George W. Jarvis, manager of the Wyalta Oil Co. Mr. Ellison talked on his company's experience in safety work, pointing out its benefits in both a humanitarian and business way to the company. Mr. Jarvis spoke on the "Relation of Accident Prevention to Compensation and Medical Costs."

THE Rocky Mountain Division of Development and Production Engineering held sessions Wednesday afternoon with R. S. Shannon presiding as chairman. C. D. Buffett, petroleum engineer of the Midwest Refining Co., Salt Creek field, presented a paper on "Deep Sand Development, Salt Creek Field." The paper dealt largely with production from the Dakota, Lakota and Sundance series. The second paper was "Metallurgy of Steel in Equipment" by J. H. Reece, metallurgist of the Colorado Fuel & Iron Co., Pueblo, Colo.

The annual banquet was served to about 150 guests and members. The leading talk was given by Governor Brooks, who also acted as toastmaster for the program. He said, "I sometimes feel that overtaxation of grazing land and oil lands is creating a situation that may kill the goose that lays the golden eggs."

Many remarks of speakers during the evening dealt with conservation of petroleum. One man remarked, "It seems, to date, that all the oil conservation being carried on in this country is being exercised in localities where such conservation already was in practice."

Informal talks during the evening were made by A. R. Wilson of Denver, vice president of the Texas Produc-

tion Co.; R. S. Shannon, Continental Oil Co. Denver; John McFadyen, vice president of the Ohio Oil Co., in charge of operations in the Rocky Mountain; A. J. Hazlett, editor of the *Inland Oil Index;* H. F. Crocker of the Mountain & Gulf Oil Co., of Denver; Robert Ogden, Jr., Casper attorney, J. W. Steel, of the U. S. Geological Survey, and Hon. Carl M. Cox, Wyoming State Land Commissioner.

The Rocky Mountain Development and Production Engineering Division was in session Thursday morning with R. S. Shannon presiding. W. W. Moore, of Denver, production engineer of The Texas Production Co., spoke on "Importance of Pressure Control on Small Flowing Wells," his talk being based upon observations and experiments with wells in the Moffat field in northwestern Colorado. "Improved Recovery Methods in Salt Creek," was discussed by F. M. Cole, assistant petroleum engineer of the U. S. Geological Survey in the Salt Creek field. Mr. Cole gave a number of practical suggestions for operations in other fields.

Another session of the National Safety Council was held at luncheon, Thursday, in charge of Boyd Osborne. R. M. Andrus, manager of the Standard Oil Co. of Indiana, Plant No. 1, talked on "Safety at the Refineries." "Avoiding Dangers at Filling Stations" had been assigned to Daba P. Van Burgh at Casper, acting district sales manager of the Continental Oil Co. Mr. Van Burgh was unable to be present. The paper was prepared and presented by Frank B. Taylor, Jr.

The Rocky Mountain Oil & Gas Association was in charge of the closing meeting Thursday afternoon, with Governor Brooks presiding. A paper was presented by J. W. Steel, mineral leasing division supervisor, U. S. G. S. on "Unit Operation."

The gasoline tax was discussed by W. F. Wilkerson of Casper, president of the Wyoming Automotive Co. Mr. Wilkerson advocated a reasonable sales tax, but insisted that the revenue therefrom be used exclusively in the construction and maintenance of highways, and not diverted to other uses. The subject also was discussed by Mark O. Danford, of the Midwest Refining Co. He thought the present four-cent tax was too high.

Tonkawa Field Men Compare Notes on Repressuring

By John Power

N. P. N. STAFF WRITER

TONKAWA, Nov. 21

THE greatest good which repressuring can do is to point out the value of the gas originally in the oil reservoir at the start of development. A successful repressuring project means that it has been profitable to replace gas in the oil sand as a propulsive agent. Replacing the gas cannot be done for nothing, and if it is profitable to spend money to restore conditions which existed to begin with, it should be self evident that greater profits result from maintaining the original conditions as long as possible.

It was this point which was stressed by the field men members of the Tonkawa chapter of the American Petroleum Institute Division of Development and Production Engineering at the chapter's regular monthly meeting held in Tonkawa the evening of Nov. 20.

Considerable repressuring is being carried on in the Tonkawa area. There is a total of about 50 key, or pressure wells scattered throughout the field, half of which have been used for this purpose for about a year and a half, and the remainder for about three months. The average input volume of gas going to these key wells is about 40,000 cubic feet per day per well. The pressures vary throughout the field, depending on sand conditions at the well, and the sand into which the gas is being introduced. The upper and lower Hoover sands require an average pressure of around 120 pounds, while the deep sand (Wilcox) takes the gas at an average pressure of 85 pounds.

Engineers who have studied the field are of the opinion that there is about 10 per cent of the normal ultimate yield left in the field. If repressuring continues to give as good results as it has to date, it is anticipated that an additional 10 per cent will be recovered through this agency. Total recovery figured on a well basis, and not on an area drained basis has been about 33,000 barrels per acre.

A study of the results obtained so far from repressuring shows that it has required about 2500 feet of input gas per barrel of increased production lifted from the upper Hoover sand. The lower Hoover has been repressured with about 1000 cubic feet of gas per barrel of increase lifted, while the Tonkawa sand has increased its production on 1800 cubic feet of gas per barrel of increase lifted.

In areas where the gasoline plants are of the compression type repressuring with the dry or residue gas is comparatively inexpensive. But even where some additional investment is necessary it is noted that the cost per barrel of oil produced goes down.

In pools where repressuring will increase the ultimate recovery 10 per cent it is estimated that the total cost of development and production per barrel will be no greater than what the figure would have been had no repressuring been undertaken, and had there been no resulting increase in the total recovery of oil.

In the Tonkawa area it was pointed out that most of the connections to the well-head are made direct, instead of from a header. High pressure manometers are used, which give an indicated rather than a recording reading. This method of checking the input volumes has been found cheaper than the use of recording instruments, and sufficiently accurate. The pressures and input volumes are fairly steady, so that by allocating the indicated figures taken at any given time, it is possible to keep a satisfactory check on the information desired.

Needle valves are used to regulate the input volume, with a heater ahead of the valve to take care of the cooling and expansion during the winter weather.

Very little trouble is experienced in the area from by-passing of the gas from the key wells. Such wells as gave evidence of this were all extremely small, and have been shut in entirely. It is the opinion of production men and engineers who have been handling the repressuring work in the Tonkawa area that more key wells, with a reduced input volume of gas per well would be a more satisfactory arrangement than that now in effect.

It has been found that an increased number of key wells has a tendency to reduce by-passing, and although this is not a serious problem in the Tonkawa area, it is felt that a greater number of key wells means more effective repressuring. For this reason several wells which have fallen below the stripper class are being saved for additional key wells, or for observation, instead of being plugged and abandoned as they would be in the normal course of events.

The use is being considered of these additional key wells to cross-pressure, or unbalance the pressure drive now under way, on the theory that this may provide an additional increase.

It has been found difficult to repressure wells in the Tonkawa area which are making much water. Experience has shown that the best results in the shallower sands are obtained from key wells selected on a geological position basis, rather than on surface location. On the Wilcox key wells, it has been the general experience that the selection of key wells on a geographical position will prove as helpful as any other method which has been tried.

Speed as Well as Power Needed In Ideal Oil Well Tractor

By John Power
N. P. N. STAFF WRITER

DRUMRIGHT, Nov. 22

THE ideal tractor for servicing oil wells is one which has power and speed enough to pull the rods on any well and run them back in one day. To do this on the deep wells of the newer fields requires power, and lots of it. And power applied directly to the power take off, instead of through numerous gear ratios, as gear ratios mean speed reduction.

The ideal tractor, and the ideal winch were discussed by T. G. Price, of the automotive department of the Shell Petroleum Corp. at the regular November meeting of the Drumright chapter of the American Petroleum Institute Division of Development and Production Engineering. This discussion, together with industrial moving pictures showing the building and uses of the Oilpull tractor made by the Advance-Rumely Corp. were the features of the meeting.

According to Mr. Price, the tractors should be so designed that they can pull, without overloading, a string of wet tubing with one line per 1000 feet of tubing strung up. As the load lightens it is easy to tie back unnecessary lines and increase the speed. Different sizes of tractors should be built and selected for the various depths of wells. It was poor practice, said Mr. Price, to step up the power of a tractor by using added gear ratios, particularly as all the gear ratios needed could be found in the derrick with the proper number of lines strung up.

"Why buy gear ratios?" asked Mr. Price. "They increase the hazard to both the well and to the workmen. Their use places the winch ahead of the gear ratio, instead of behind it, where it belongs. Tests have proved that the greatest time saving in pulling either rods, tubing or casing is in block travel.

"To get the greatest speed out of the modern equipment used for pulling wells it is necessary to utilize the derrick, and to build up the proper gear ratios in the derrick by the proper stringing up of lines. Additional gear ratios between the power plant and the power take-off slow down block travel, until if carried far enough, it would be necessary to mark the headache post to tell when the blocks were moving at all."

Mr. Price went on to say that the ideal winch has two service speeds, with an emergency high speed. One speed, for pulling tubing should be figured to impart a line speed of 120 feet per minute. The second speed should allow a line speed of 240 feet per minute to be used when pulling rods. The emergency high speed, for use when the load had become extremely light, should provide a line speed of around 500 feet per minute.

The tractors should be so designed, he said, to make such speeds possible. To do this the tractors should be provided with powerful enough engines to do the work for which they were contemplated with a line strung up for every 1000 feet of tubing.

That the tractor was the proper source of power for servicing wells was hardly open to argument, said Mr. Price. When the pumping engine was used as the power plant it was speeded up and operated at a rate for which it had not been designed. This meant high engine repair bills, and additional down time with its consequent loss of production.

That there were successful winches designed to be operated by and on trucks Mr. Price said he knew. But, said he, these outfits are more applicable to extremely scattered production, which necessitates long trips for both equipment and crew. In the main, though, the tractor has the right idea, provided the tractor is properly designed.

In speaking of the winches, Mr. Price said that more attention should be paid by the manufacturers to the size of the drums furnished. Drums which were too small made it hard on the lines, and cut them up badly when spooled under load. It was pointed out that ½-inch sand lines were no longer used in pulling rods, a point to which winch manufacturers should pay some attention.

Heretofore, he said, the winch manufacturers have maintained that it was next to impossible to provide large drums for use on tractor assemblies, as the tractors could not handle them. It was, he maintained, up to the tractor and winch manufacturers to get together and work out assemblies which would be properly designed to do the work, and not get by on main strength, provided in many cases at present through slow, and comparatively unsafe gear ratios.

Mr. Price closed his remarks by saying that the field chapters of the A.P.I. would be an excellent place to start working out a standardized group of sizes for tractor winches.

Particular pride was expressed by the officers of the Drumright chapter over the large proportion of prizes which members of the organization won in NATIONAL PETROLEUM NEWS Field Men's Idea Contest, staged during the International Petroleum Exposition. A considerable portion of the evening was given over to this subject, as several of those who had won prizes were present.

The Idea Contest was, the men said, one of the best things ever done for the field men, and incidentally, for the companies employing them, and NATIONAL PETROLEUM NEWS was highly commended by the entire chapter for its efforts in behalf of the field men.

No subject for discussion was chosen for the next meeting, scheduled for December 17. A banquet is planned for that night, and it was expected that the program will be more entertaining than serious.

Salt Water Disposal Is Discussed

BARTLESVILLE, Nov. 23.—How to get rid of, or what to do with oil field salt water and just what makes a Reda Unit, bottom hole pump function, are interesting subjects. So much so, that at the first meeting of the year of the Bartlesville Engineers Club, the turnout was unusually large.

Ludwig Schmidt of the bureau of mines gave the first paper, which consisted of some illuminating data on the disposal of salt water. Evaporation sumps, methods of returning salt water to the sand, and other suggestions, were made and discussed. Studies of the Bureau on the effect of oil field brines on live stock and fresh water supply were given in detail.

Following this discussion, E. J. McKee of the Phillips Petroleum Co., gave a talk on the mechanical details of the Reda Unit pump. Illustrating his subject with blueprints of the construction of this novel electrically operated, centrifugal pump, which is placed in the bottom of a well, Mr. McKee gave some startling figures on its actual performance. However, he states that the device is about to emerge from the experimental stage and will shortly be placed on the market.

New officers for the coming year were installed after the serving of a dutch lunch. They are, K. E. Beal, Phillips Petroleum Co., president; Fred Lichtenheld, Indian Territory Illuminating Oil Co., B. F. Buff, National Zinc Co., R. C. Hauber, Empire Gas & Fuel Co., vice-presidents, and W. S. Morris, U. S. Bureau of Mines, secretary and treasurer.

The evening was concluded with a trip through the plant of the Bart Manufacturing Co., where the Reda pumps are built.

Change Prorating Practice to Reduce Howard-Glasscock Production

By Paul Wagner
N. P. N. STAFF WRITER

HOUSTON, Nov. 23

PIPELINE companies serving the Howard-Glasscock county area, in the eastern part of the West Texas Permian salt basin region, are to make "nominations" for crude that, beginning Dec. 1, probably will reduce the quantity of oil marketed daily from that territory.

The area has been prorated for months at a maximum of 37,500 barrels daily fixed by the railroad commission of Texas, under its conservation powers, in line with recommendations of operators.

Most of the time Howard-Glasscock production has approximated the maximum allowable, but under conditions permitting exploitation of wells at varying percentages of their potentials. Some of the wells had to be pinched to as little as 25 per cent of their potential, because of their flush character, whereas others were exploited to within 85 per cent of the quantity of crude they were capable of making, reflecting the necessity of pumping recovery.

It is proposed now to prorate all leases on a basis of parity of percentage recovery in relation to potential production, which will have the effect of reducing the daily average yield of the entire territory, perhaps to as low a level as 25,000 barrels daily.

Shell Pipeline Corp., has nominated 8000 barrels daily market outlet for the territory, beginning Dec. 1, and the Humble Pipeline Co., similarly will handle 6000 barrels daily. Magnolia Petroleum Co. has made no "nomination," but has been recently handling only its own oil in the territory, amounting to about 1500 barrels daily.

Cosden Oil Co., Great Western Refining Co., and Big Spring Refining Co., all operating plants in Howard county, have not as yet made "nominations."

Operators attending a prorating meeting at Fort Worth, Nov. 22, however, forecast that "nominations" would not greatly exceed 25,000 barrels daily; and that, should they do so, the effect of equalizing percentage recoveries to potentials would reduce actual yields to approximately that level for the immediate future.

The "nominations" of crude requirements would be made from month to month for ensuing 30-day periods and prorating allowances would be figured in conformity therewith.

In figuring percentages in the past, different schedules, or practices had been made to apply to old and new wells; also in different parts of the territory. Hereafter, this practice is to be applied uniformly.

From now on, also, the umpire will witness a two-hour pumping gauge of wells in the territory and the second hour's production will be used in computing the prorating potential. This will eliminate the old practice of allowing a well to stand and accumulate oil in the hole ahead of a test period, which frequently resulted in the establishing of potentials at higher levels than a well actually could make in a full 24-hour period.

A discussion of refining qualities of Howard-Glasscock crude took place unofficially in connection with the Fort Worth meeting. The crude was described as yielding less gasoline in refinery practice than other raw material from West Texas salt basin areas. The point was advanced by a representative of the Shell Petroleum Corp., and concurred in by representatives of the Humble Oil & Refining Co., and the Cosden Oil Co.

The situation was described after the meeting as probably forecasting a separate schedule of prices for crude in the Howard-Glasscock territory as distinguished from other West Texas fields. A change suggested is a 2-cent differential per degree of gravity applying from the gravity bracket 29-29.9 degrees upward. The present price is 90 cents a barrel for that gravity, each degree upward taking a 4-cent spread to 32-32.9 degrees at $1.04.

Most of the Howard-Glasscock oil comes within the range of the brackets mentioned.

In the first half of November, average daily crude deliveries from the Howard-Glasscock producing area to West Texas refineries amounted to 3540 barrels daily to the Great Western Refining Co., at Big Spring; 1660 barrels daily to the Big Spring Refining Co., Big Spring; and 9890 barrels daily handled by the Cosden Pipeline Co., to Big Spring. The Cosden pipeline deliveries averaged 6020 barrels to the Cosden Oil Co. refinery and 3870 barrels to the Richardson Refining Co., plant, also at Big Spring.

Umpire's Statement, Howard-Glasscock Territory, Showing Runs For 13½ Months, October Totals and Cumulative Recoveries

Name of Company	Total runs 13½ months in Barrels	No. of Wells	October Runs, Bbls.	Total Bbls., 11-1-29
Amerada Petroleum Co.	731,541	8	48,099	779,640
American Maracaibo Co.	945,926	8	23,927	969,853
California Co.	181,858	2	27,656	209,514
Cosden & Co.	342,318	6	7,360	349,678
Cranfill & Reynolds	36,558	1	5,585	42,143
Continental Oil Co.	840,247	12	92,827	933,074
Howard County Oil Corp.	234,604	2	46,710	281,314
Humble Oil & Refg. Co.	143,023	3	27,749	170,772
Kirby Oil Co.	2,092	2	8,846	10,938
Louisiana Oil Refg. Co.	257,461	2	11,982	269,443
Lion Oil & Refg. Co.	11,343	1	10,263	21,606
Magnolia Petroleum Co.	1,267,841	15	51,741	1,319,582
Merrick & Bristow Co.	807,823	4	32,379	841,202
Moody (Superior)	1,481,381	21	106,430	1,578,716
Owen-Sloan & Cosden	1,303,572	7	65,456	1,369,028
Plymouth Oil Co.	350,338	4	63,395	413,753
Pure Oil Co.	1,446	1	1,161	2,607
Schermerhorn Oil Co.	1,056,658	11	108,658	1,165,316
Shell Oil Corp.	242,174	5	36,937	279,111
E. L. Smith Oil Co.	.....	1	816	816
Sprague Oil Co.	217,859	3	4,761	222,620
Sun Oil Co.	826,307	5	74,076	900,381
Taylor-Link Co.	62,872	2	4,328	67,200
Ward Oil Co.	279,183	3	36,552	315,735
Witherspoon & Glassock Co.	112,635	2	12,667	125,302
Total	11,737,060	131	910,370	12,678,318

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The Editors' Viewpoint

National Petroleum News

Institute Should Father Unit Development

By Lawrence E. Smith
N. P. N. STAFF WRITER

FOREMOST in the deliberations of American Petroleum Institute directors in Chicago next week will be the much-discussed topic of unit development. We are assured by President E. B. Reeser that the theme will be given ample time and that converging lines of thought from over the country will probably be welded into concrete recommendation.

This is one of the most important subjects for consideration by the producing branch of the oil industry if orderly development of oil production is to be brought about.

Splendid momentum has been given the movement in the past year. Efforts of the Mid-Continent Oil & Gas Association and its president, William N. Davis, have advanced the idea that the one workable plan of controlling production permanently is in the cooperative development of oil pools. Vast duplication of effort and expense can be avoided if all leases on a geologic structure are consolidated and operated as one. The rate of drilling and production can be measured to the demand for oil. An economic gate valve can be placed on each oil reservoir, to be opened or closed at will.

Time for Action at Hand

We believe that the state of industrial education on this subject has progressed to the point where action should come quickly from now on. Much time has elapsed since the plan was first broached. Many who are now quite enthusiastic about it have been sub-consciously aware of the unit development idea for a long time. Most of the discussion, spoken and printed, has come within the past five years but there is a government record of a hearing before a Senate land committee in 1915 when Earl Oliver, production engineer explained to the senators the advantages of consolidating small leases. A year earlier he had published a pamphlet on the subject. The term "unit development" was invented at a later date. However, 15 years ago there was talk of this method of operation and the same talk is continuing.

We believe the time is here for the necessary push which will put theory behind and make action the ruler of the situation. There is enough agreement on the soundness of unit development as a policy for both fair and foul weather that the industry can put it through without asking legislative support.

Protection for Small Operators

There are today a number of companies that refuse to buy protection acreage in a non-unitized block. There are also some who think that, because of their small size, they will be squeezed out of the business of producing altogether under unit development. Mr. Farish recently remarked that the small operator should be insisting more loudly than anyone else on unit development. We believe he is right.

If a block is being "peddled" by a broker in percentages of the whole rather than in divided tracks, the small operator may be able to take only one per cent while the major company buys ten, but that is about the proportation ordinarily held in separate leaseholds in any new pool that is found. And in the absence of unit operation the little fellow frequently is "run ragged" to keep up his end of the drilling and frequently has to sell at a sacrifice. Under unit development he would merely pay his share of the total development cost, greatly reduced from the competitive cost now prevailing, with the assurance that he will get his share of the returns.

Now, specifically, what can the American Petroleum Institute do in the matter? It can, in convention assembled, study and weigh carefully the report of the Mid-Continent Oil & Gas Association which will be before it next week. That report will contain many definite suggestions as to procedure in unitizing drilling blocks. Having considered the report, its directors can endorse unit operation as an industrial policy.

Committee Should Head Movement

Probably it will choose, as it did in the case of lease form revision, to refer details to local associations. It might well create a committee of at least one member from each of the local associations, or from each oil producing state, to be a contact body between the institute and the operators. This committee could report to the institute directors at regular intervals on the status and progress of unit development. It is well for the executive heads of the companies who make up the directorate of the institute to have such information before them as they go along.

Further, such a committee could undertake the preparation of a handbook on the subject. One such has been suggested for the Mid-Continent by the association committee of land men. A more extensive one, containing the lease forms used in the various states, their interpretations and limitations, might well be prepared by the institute. Conditions vary in states and those variations must be known in such a broad movement as this.

Keep Record Up to Date

The institute should maintain a record of unit projects all over the country and a standing committee such as we have suggested could report all developments of this nature. To appraise correctly the progress of the work there must be specific data at hand. To date the record has been pretty barren. Unfortunately, nearly all of the test wells drilled on unitized blocks have been failures. These have been worth while in splitting the

cost of putting down the test, but there is not at hand yet any big successful enterprise where a pool of considerable size was brought in, drilled and produced in accordance with market demands and the best engineering and geological thought. When such an example appears it wants to be thoroughly advertised.

The unit development movement is proceeding apace in some parts of the country. In others it is lagging. The institute directors, representative of all sections of the country and all branches of the industry, can do much to make the movement uniform. All the directors should take an interest in the matter. It is not simply a producers' movement. Refiners and distributors as well are affected by anything that affects crude supply.

This question is as important as anything the institute may consider in Chicago. The industry stands upon the threshold of a new policy, one that changes the very fundamentals of its conduct. Chaos which has attended the development of some of our greatest fields can be immediately obviated in part and in a little while for all time. Marked progress has already been made. The institute can speed the day when return to the traditional policy of unrestricted development will be impossible.

A Model Resolution

We suggest to the directors of the institute that they adopt, in Chicago, a resolution something like this:

"It being our conviction that in unit development there lies a permanent remedy for the ills of overproduction of oil, we endorse the plan as an association and we pledge the support of the companies we represent. We believe that no test well should be started unless the acreage it is to test has been organized for development as a unit if production is found, such unitization to be 100 per cent if possible, but in lesser degree if full cooperation is not possible.

"We further favor immediate work in unitizing acreage in wildcat territory, even though lease expiration dates are a considerable time in the future and test wells are not immediately necessary to hold the leases.

"We further recommend that blocks of wildcat acreage offered to the producing companies be offered in percentage portions rather than in divided tracts.

"That unit development be expedited and encouraged, a committee on Unit Development Practice and Procedure is hereby created, which shall be a permanent one. It is authorized to proceed with the preparation of a national handbook on this subject and it shall be the further duty of this committee to report to the institute directors the progress in the several sections of the United States represented by the committee."

Acquaint Station Men With S. A. E. Numbers

SINCE the motor car manufacturers are coming more and more to use the S.A.E. viscosity numbers in their instruction books to car purchasers, to acquaint them with the grade of lubricating oil they should use in that car, it is very likely the oil companies should give their station salesmen some knowledge of what these designations for lubricating oils mean.

Most of the oil companies some time ago announced they had adopted the S.A.E. viscosity numbers, which means only that they were designating their various grades of motor oils with these numbers as well as marking them "medium," "heavy" or "extra heavy," as they used to do.

As far as casual observations at stations have gone, many companies are not branding their drums and their packaged oils with the S.A.E. numbers. If they are doing so, and if they have given their station man an idea of what these numbers mean, there would be no confusion on his part if a customer drove in and asked for an S.A.E. No. 30 oil. If the oil company has not marked its drums and informed the station man his confusion on the subject might lose him a customer.

As has been pointed out many times, the S.A.E. numbers are in no way intended to take the place of the company's brand name for its oil, or necessarily of its own marking as to "light," "medium," and so on. The numbers do represent a standardized grading based on viscosity only which has been adopted by the automotive society to do away with the confusion caused by one oil company calling its oil a "medium" and another oil company calling the same grade of oil its "heavy."—V. B. G.

Commercial Bribery On Its Way Out

THE federal courts have taken cognizance of commercial bribery—the making of gifts to employes of customers, or prospective customers, for the purpose of influencing a business transaction—and the result will likely be the stiffening of the backbone of business executives against this practice carried on under various guises.

The federal court recognition of the practice came in the United States Court of Appeals in Cincinnati, which entered a consent decree affirming an order of the Federal Trade Commission against the Grand Rapids Varnish Co., and demanding a compliance with the commission's order on the part of the paint concern.

The court order reads that the varnish company "do forthwith cease and desist from directly or indirectly secretly giving, or offering to give, employes of its customers or prospective customers, without the knowledge of or consent of their employers, as an inducement to cause their employers to purchase or contract to purchase from respondent, varnish and kindred products, or to influence such employers to refrain from dealing, or contracting to deal, with competitors of respondent, without other consideration therefor, money or anything of value."

The court's ruling has added significance for industry in that it backs a rule in the code of trade practices of the varnish industry in the second group, that class defined by the trade body as constituting good business practice but not enforceable under present laws.

The practice of using bribes to influence sales is as old as business itself, and ranges all the way from buying lunches and entertainment of various forms to the secret giving of money, as ruled against by the court.

One form is giving of lavish Christmas presents, even openly. If there is any occasion when any thought of influencing future business transactions should be put out of mind it is at Christmas. Yet many business firms spend a great deal every year for gifts which ostensibly pass from the sales manager, or chief executive of that company, to the head of a firm which has been a good customer of that business house. In many cases these two individuals have not seen each other during the year, their entire relations have been through business correspondence between their firms.

Speed the day when business can keep its hands off at Christmas, the day when a Christmas present, even a card of greetings, is a true expression of fellowship, paid for out of the giver's own pocket and not by his business house.—V.B.G.

WE IN this column, have gone along with the boys on this unit operation idea faithfully and have cheered lustily their every utterance. No spoken or printed word on the subject has escaped our attention. We have even read through the evidence adduced by H. L. Doherty in his attempts to prove that the lawyers know no law.

A few minutes the other day devoted to serious contemplation of the subject convinced us that we were wrong. Regretfully, we announce here that we must from now on be against the scheme. We dislike being the sole member of a minority, but our oath of allegiance to the flag, administered by our teacher in the seventh grade years ago, would be violated and made a mockery if we failed to speak our convictions.

Our protest against the unit movement is based solely upon the news aspects of the oil industry. In the good old chaotic days a wildcat strike was followed at once by events with a real kick in them.

A hundred wells or more started drilling just as soon as the derricks could be made to stand up. Ragtowns sprung up in all directions; truck drivers put on free exhibitions of the manly art every day that would have been worth millions if staged in Madison Square Garden.

The local law enforcement broke down, following the best oil field tradition and martial law was declared. Everything was life, motion, doings with fur on the chest.

Now pause with us, friends, and contemplate the bringing in of a new field under unit conditions. The discovery well would be heralded with no more excitement than accompanies the announcement that the city plans to lay a new storm sewer. About a month after the first well would hit, the location would be made, quite unemotionally, for number two. A drilling boom would consist of less than a dozen wells. There would be no more law-breaking than is done by any God-fearing citizen. There wouldn't be a headache in a barrel of such development.

They talk about saving the gas, keeping it confined in the sand to do useful work in lifting oil. We, personally, don't want it saved. If allowed to escape in huge volume it makes a dandy fire, enabling us to take pictures and write thrilling yarns about how M. M. Kinley or Tex Thornton or C. O. Rison defied death in putting it out. And the industry does love its fire pictures, or so we editors have always supposed.

We submitted our thoughts on this subject at luncheon the other day to Dr. H. Foster Bain, of the A.I.M.E.; Dr. J. B. Umpleby, of Oklahoma City; Dr. H. C. George, of the University of Oklahoma; Earl Oliver, of Ponca City and C. V. Millikan, of the Amerada Petroleum Corp. All of them are earnest unit developers. You can't imagine how flat it all appeared to sound to these dignitaries. Only the fact that we were at Dr. Umpleby's club, we suspect, kept us from being given the check.

* * *

Opinions Made Public: ". . . To additionally facilitate the borrowers of money in obtaining reasonable credits and to safeguard the general business welfare of the country, the federal reserve act was enacted. But, for a considerable time, the federal reserve board, created under said act, has conspicuously failed to genuinely carry out the objectives of said law. It has, to a large degree, contributed to an undue fear and hysteria with the borrowing public. It has acted sympathetically with those who profit by the constriction of credit, instead of assisting the users of credit. It should be abolished, or its personnel should be changed."—Charles J. Wrightsman, oil producer, Tulsa.

". . . . the present and future salvation of the industry generally is dependent upon the enactment of additional legislation by the various leading oil producing states that will put the force, power and authority of the state behind any conservative development and production program that may be worked out by the preponderant majority interests in any flush producing fields."—Roy M. Johnson, Independent operator, Ardmore.

* * *

The committee of three in charge of preliminary arrangements for proration of Kansas pools, additional to the Valley Center-Wright and Voshell, consisted of A. L. Derby, president of the Derby Oil Co.; J. Garfield Buell, president of the Bu-Vi-Bar Petroleum Corp. and George Bruce, vice-president of the Alladin Petroleum Corp.

* * *

History of Bakersfield, new west Texas oil town, as reported by the Associated Press: Oil discovered on Sunday; townsite leased, Monday; hotel moved in, Tuesday; first restaurant, Wednesday; first dry goods store, Thursday; 20 buildings started, Friday; talk of incorporation, Saturday; airport laid out, Sunday.

* * *

Amarillo friends of Carlton Dysart, former field superintendent in the Panhandle fields, hear from him that he is getting along nicely in his work in Sumatra, D. E. I., where he went last March in the employ of the Royal-Dutch-Shell interests.

* * *

Preliminary to the launching of the formal public campaign on its new Germ-Processed motor oil, Continental Oil Co. is sending an airplane to all its division sales headquarters, east and west, a 7500-mile trip. Sales forces will be given all particulars by J. E. Moorhead, sales promotion manager; Frank Moore, special representative; G. K. Ludwig, engineer, and Ray C. Schrader, chief of aviation sales division.

* * *

Col. Zack Miller, one of the owners of the famous 101 Ranch, near Ponca City, has offered the state of Oklahoma the use of the ranch as a farm to be run by prisoners in the state penitentiary and reform schools who are trusties. His proposal is that the state supply the manpower, use the equipment and livestock on the ranch, and pay the owners half of the crop yield.

* * *

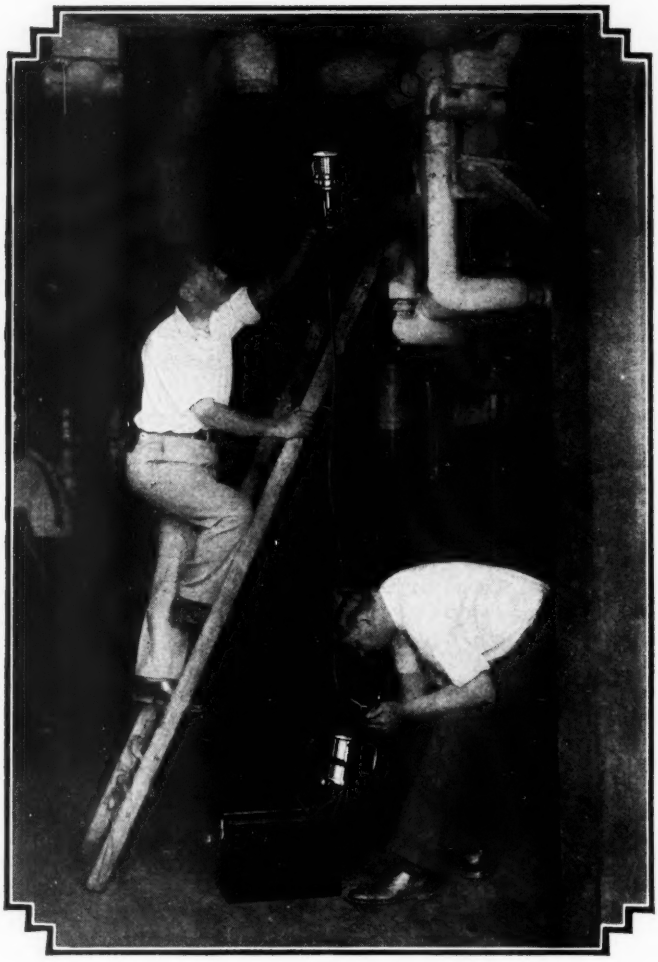
Ten Years Ago

(From National Petroleum News, Nov. 26, 1919)

Mid-Continent crudes advanced 25 cents to $2.50 per barrel. Pennsylvania oil goes to $4.50.

T. B. Hoffer resigns from Humble Oil & Refining Co. to manage Fensland Oil Co.

E. G. Seubert becomes secretary and treasurer of Standard Oil Co. of Indiana.



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NEW YORK SAN FRANCISCO, CAL.

Oklahoma City Pool Extended Half Mile South With "Sand" Wells

By William F. Lowe
N. P. N. STAFF WRITER

TULSA, Nov. 23

TWO new wells in the detrital zone combined to extend the Oklahoma City pool a half mile southward for Oklahoma's most important development feature. In Kansas a new well in the Voshell pool of southern McPherson county was the high spot. The Texas Panhandle's most notable event of the week was a one mile extension southwest of the Continental-Johnson pool in Hutchinson county.

Of double importance are the new Oklahoma City wells. Both are producing from the detritus which lies upon the Siliceous lime, productive in a number of wells. The first to be completed was the Sinclair Oil & Gas Co.-Amerada Petroleum Corp. No. 2 Kinter, SW SE of 30-11-2W, a quarter mile south of the famous No. 1 Kinter, the "gasoline" well. It made 7205 barrels in the first 24 hours, after drilling the pay at 6305-35.

A few days later Sinclair bailed in its No. 1 School land, NE NE of 36-11-3W, half a mile plus a location west and a location south of the No. 2 Kinter. The No. 1 School land made 4830 barrels the first 17 hours, from 26 feet of pay topped at 6394 feet.

How wide an areal extent the detrital zone may have is as yet unknown, but that it has real importance is unquestioned. If the siliceous lime area is to lie between the horns of the half moon now formed by the detrital zone wells, it may be up to the sand zones to maintain the field's economic importance. As discussed elsewhere in this issue of NATIONAL PETROLEUM NEWS the increasing volume of water which the siliceous lime wells are making is casting what many believe to be more than a shadow on the field's ultimate yield.

As witnessed by the Coline Oil Co.'s properties the sand shows a tendency to hold up in pretty good shape. In such wells as have found a respectable body of the formation it has proven more than any mere flash in the pan. With the new wells getting 26 feet of it, no tendency to thin out as yet is seen.

In addition to the extension wells the field turned in another "gasoline" well completion during the week. It was the Indian Territory Illuminating Oil Co.-Foster Pet. Corp. No. 1 Emerson, in the NE SW of 30-11N-2W. It is good for about 120 million cubic feet per day of wet gas from the detritus, which has turned in all the big gas found in the deep wells of the field to date.

Total depth of the No. 1 Emerson is 6412, with the 6⅝-inch pipe set at 6275 feet. It is a west offset to the Sinclair-Amerada No. 1 Kinter, the original "gasoline" well of the field.

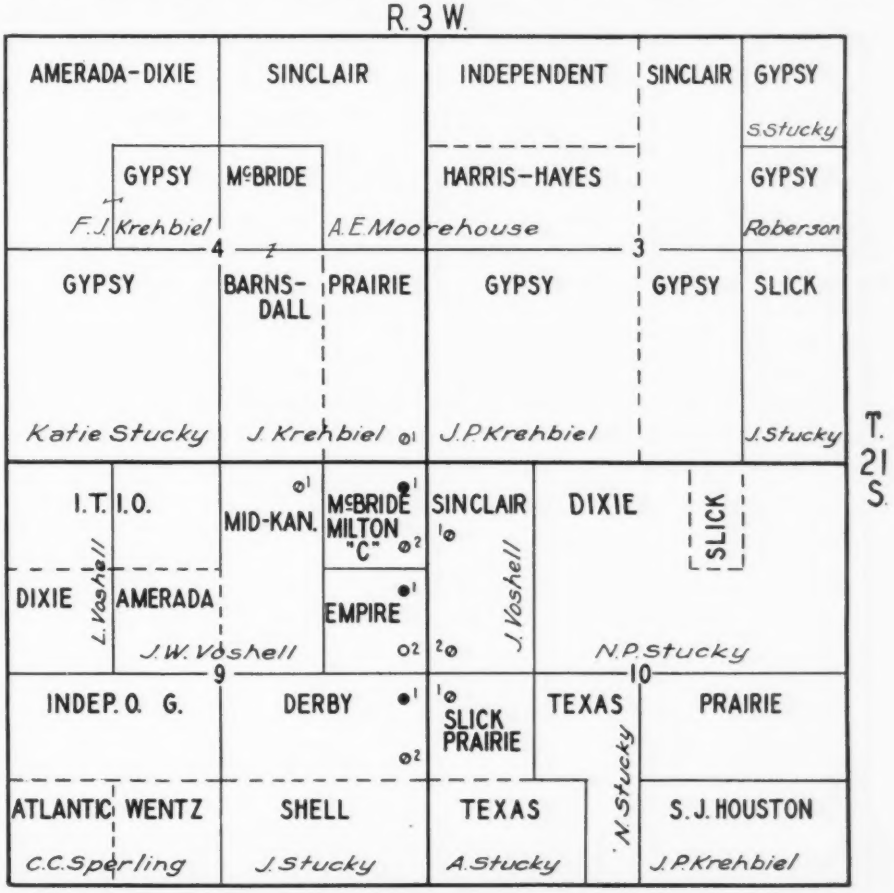
The field as a whole had one full 24 hour gage during the week with all wells open that are permitted to produce at all. There are several completions, notable among them the I.T.I.O.-Foster No. 1 T. Fuzzell, the state's biggest ever, which are serving out their 30 day shut down terms. The 26 wells allowed to produce made a total of 91,471 barrels in the 24 hours.

Nothing of more than local importance developed in the Seminole area during the week. Sporadic development along the eastern edge of Pottawatomie county is keeping interest in that area alive. A closely watched well in this area is the Dixie Oil Co.'s No. 1 Cotton, SE of 13-5N-4E, which is drilling ahead with 1000 feet of oil in the hole. The showing is coming from the Viola lime at 2380 feet.

Typical of the completions in the eastern edge of "Pot" county was the Gypsy Oil Co. No. 3 Green, which swabbed 625 barrels in 24 hours from the Simpson at 4049-4053.

North of the Seminole area, close to the town of Chandler more or less of a drilling campaign has been occasioned by the Magnolia No. 2 Decker which had an initial production of some 1100 barrels when completed about 60 days ago. There are nine drilling wells in the vicinity of the well, which produces from the Simpson. Four of these drilling wells are at depths below 4000 feet.

All of them will be shut in for



Map of the Voshell area in McPherson county, Kansas, showing the development to date

the regulation time plus the cementing period before being drilled in, so that there is a considerable delay in prospect before the importance of the area can be determined.

In the Voshell area of Kansas the most recent completion is the No. 1 Voshell, C NE SE NE, 9-21S-3W, of the Empire Gas & Fuel Co. This well found the Wilcox pay from 3306 to 3309 and swabbed and flowed 385 barrels of 42 gravity A.P.I. crude. It is a good well even though it is not quite as prolific as the discovery well of the Derby Oil Co., two locations south of it. This well swabbed 1120 barrels initially.

The Mid-Kansas Oil & Gas Co., has one of the most interesting of the present drilling wells in its No. 1 Voshell, C NE NW NE of Sec. 9. It logged the top of the chat at 2948 which is approximately 35 feet higher than any of the other wells in the pool. This indicates that the highest part of area is likely to lie to the northwest of the discovery well.

Whatever the future may hold for the Voshell pool is not a matter for the present discussion. Suffice it to say that the area is sufficiently potent right now to merit the proration placed on it by the operators.

In Rice county the well of the Milmac Oil Co., in 29-19-7W, topped the chat at 3235 and had a show of gas at 3245. It is running slightly higher than the scattered wells of this wildcat area.

Leasing activity in western Kansas has shown a tendency toward the spurts of several months ago. Ness and Lane counties have had a considerable play during the past 10 days. The Prairie Oil & Gas Co., took a checkerboard in western Ness county centering around Ranges 16 and 17 South, Townships, 24 and 25 West. Core drilling by the Shell Petroleum Corp., in Rice county has found a hot play following the drills.

In the Texas Panhandle a very much unexpected extension to the Continental-Johnson pool, four miles west of Borger in Hutchinson county was the high spot of the week. The well is known as the Continental Oil Co., No. 1D Johnson, 330 feet from the north and east lines NW-6, Block 1 B&B Survey. It is making 250 barrels of fluid, seven per cent of which is water, from a pay found from 3175 to 3178. It is a one mile extension to the southwest.

In Gray county, the Operators Oil Co., continued to find the good ones by bringing in their No. 1 Cook-Faulkner in the NE of section 30, Block B2 H&GN Survey. It started off at 300 barrels per hour and gauged 2950 barrels the first 24 hours. The pay was from 2809 to 2816 in granite wash. This well with the Magnolia Oil Co., No. 6 Wright, form a half mile northeast extension to the Finley pool.

Darst Creek Prorating Plan To Hold Field in Leash

By Paul Wagner
N. P. N. STAFF WRITER

(By Telegraph)

HOUSTON, Nov. 25.—A second complication has entered into the Darst Creek situation to confound operators engaged in formulating a prorating program for stabilization of market outlets for crude. It is a suit of D. D. Baker against Humble Oil and Refining Co. of Houston, seeking to cancel a lease and collect $200,000 alleged damages resulting from drainage through The Texas Co.'s Lemmie Anderson well in the southwest part of the Darst Creek area.

The first complication was refusal so far of L. C. Turman of Fort Worth, to enter the prorating program. Turman has filed application with the railroad commission of Texas to drill 11 test wells on a 17 acre tract inside the inferred boundaries of the field. He holds a contract for delivery of 500,000 barrels of Darst Creek crude to Grayburg Oil Co. of San Antonio, when, if and as produced. Baker's suit against the Humble charges collusion with other operators to prevent field development and sets up allegation of restraint of trade in violation of Texas statutes.

* * *

HOUSTON, Nov. 21

THE Darst Creek area of the Luling fault zone, generally recognized as capable of producing 100,000 barrels daily in 60 to 90 days, under intensive development, is to be stabilized on the basis of nominal market outlet for crude.

Two purchasing companies have indicated a market of 10,000 barrels daily will be provided after Jan. 1, 1930, and, unless others "nominate" additional outlets, production of the field will be limited to the quantity mentioned. Meantime, the approximately 550 barrels daily now being exploited by The Texas Co., will constitute the field's principal production.

The Texas Co., and the Humble Oil & Refining Co., both through subsidiary pipeline systems, have "nominated" market outlets of 5000 barrels each, daily, after Jan. 1. Magnolia Petroleum Co., which has one exploitable well in the field, good for at least 3500 barrels, initial production, has not been producing it and has signified no intention of doing so as yet.

An area upwards of four miles in length, from the Magnolia Petroleum Co.'s No. 1 Appling well, in the James Hodges survey, to The Texas Co. completions, in the J. C. Darst survey, is affected by prorating plans generally agreed upon for the territory.

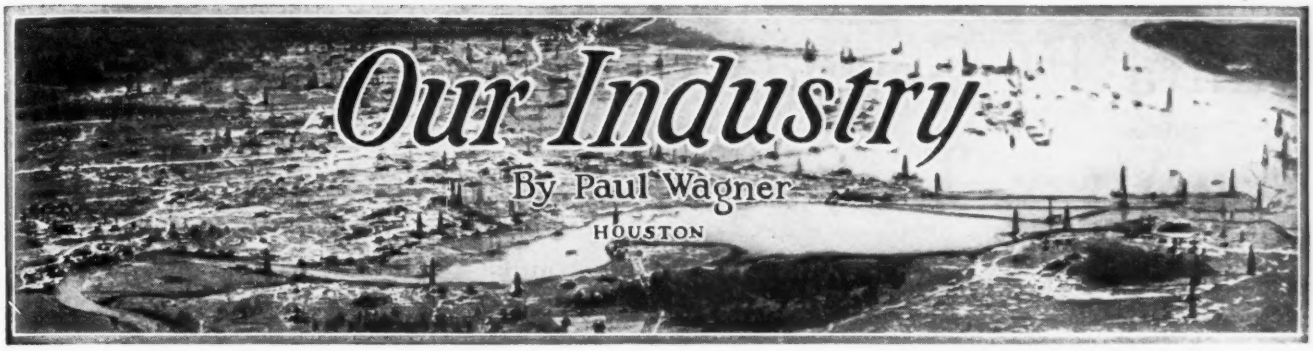
The two wells of The Texas Co. are its Dallas Wilson discovery and a north offset, drilled several months ago and at no time exploited above 1500 barrels daily under a "gentlemen's agreement" whereby other operators refrained from adjacent development. Together, the two wells are estimated good for 3500 to 4000 barrels, or possibly greater, daily production.

It is proposed to handle the field in similar manner to the program followed in prorating the Yates pool of Pecos county, West Texas. Plans call for a 50 per cent allowance in prorating practice for units of 20 acres each and 50 per cent allowance for average potential production. As in the case of the Yates field, where lease ownerships permitted 100 acre units, the use of an average potential in the "yardstick" tends to discourage the drilling of unnecessary wells.

Under the system, operators are under no actual restriction of development and may drill such number of wells as they may see fit. However, in prorating practice the potential production of wells is added together and then divided by the number of wells to reach what is termed average potential.

The Darst Creek plan, in common with the Yates field system, is construed to meet requirements of anti-trust laws of Texas, because of prorating practice being governed by market outlets and not actually restricting freedom of action in the development any company may undertake.

Fred Sealey, assistant division manager of The Texas Co., at Houston, was named permanent chairman of the Darst Creek Operating Committee at the Houston meeting. He succeeded John R. Suman, temporary chairman, who is a director and general production executive of the Humble Oil & Refining Co. A permanent secretary of the committee has not been selected.



ED. A. LANDRETH, president of the Landreth Production Co., Fort Worth, is fostering a stabilization program looking toward "reasonable" drilling in the Ector county area of West Texas, south of Judkins and southwest of Odessa. Mr. Landreth sent a letter to all oil operators interested in the area, suggesting that one well to ten acres probably would result in overdrilling of the field.

Instead of spacing locations 660 feet apart, Mr. Landreth suggested they should be 880 feet apart in the east-west direction. He would retain 660 foot spacing in a north-south direction because of the manner in which lease lines fit. Mr. Landreth owns three oblong tracts of 160 acres each in the area between the recent Penn-Humble well, in the eastern part of the territory and the earlier small completions of The Texas Co., an acreage operated for its partnership with the Cosden Oil Co.

New locations for drilling are being made by the Landreth interests and the Texas-Cosden partnership in secs. 1 and 2, block 35, University land. Original Texas-Cosden wells, in the western part of the territory, made from 15 to 25 barrels, initial production. The Penn-Humble completion, approximately two miles east, tested about 300 barrels daily when first completed.

* * *

Governor Young of California has appointed W. E. Humphrey, president of the Associated Oil Co., San Francisco, as one of five members of the Olympic Games Committee charged with responsibility of preparing for the tenth Olympiad, to be held in Los Angeles in 1932.

* * *

F. G. DeYoe, long associated with the J. S. Cullinan interests as purchasing agent for the now defunct Galena Signal Oil Co. of Texas, is now South Texas distributor for "Barrelled Sunlight," an industrial paint widely marketed in the southwest and elsewhere. Mr. DeYoe is an honorary member of the Purchasing Agents Association of Houston, which he helped to organize several years ago.

* * *

Willis Storm, Jr., of Dallas, who heads geological work of the Petro Royalties Co., in the southwest, was formerly associated with other interests of the Pettigrew-Meyer group. Before that he was at various times connected with geological work of the Sun Oil Co., Sinclair Oil & Gas Co., and the Empire Gas & Fuel Co. He served in the World War. He is a native of Oklahoma City and got his degree from the University of Oklahoma in 1920. Besides the American Association of Petroleum Geologists he is a member of the American Institute of Mining & Metallurgical Engineers.

* * *

Henry B. May, who is widely known in both the producing and marketing industries of the southwest, now makes his home at Fort Worth. He moved there several months ago from Wichita Falls in order to facilitate his movements in various districts of north and central Texas. Mr. May operates producing properties in the shallow sand district that fringes the general Ranger deep line territory on the west and also holds field interests in the Greater Wichita Falls district.

In the marketing industry he has been identified with interests controlled by Walter K. Campbell at Tulsa, Wichita Falls and in the San Antonio district, in all of which places he has lived in the past 10 years.

* * *

Arkansas Fuel Co., which recently opened a West Texas office at San Angelo, continues to add to its staff in that territory, D. C. Shay, geologist, and Ralph Taylor, assistant geologist, have been transferred to San Angelo from Arkansas territory. Alexander Milyko is district geologist in charge. J. N. Sandlin, Jr., West Texas district land man, was transferred to San Angelo in August.

* * *

R. H. Fleser, superintendent of equipment and construction in the sales department of The Texas Co. of California, was identified with the Standard Oil Co. of California from 1918 to 1928, when he joined the California Petroleum Corp., as construction engineer. He reached his present position after the "Calpet" was absorbed by The Texas Corp. He is a native of Michigan and an engineering graduate of the Oregon Agricultural College.

Willis Storm, Jr.

Henry B. May

Santa Fe Springs Output Down Again After Topping 162,000 Barrels

By Jack N. Westsmith
N. P. N. STAFF WRITER

LOS ANGELES, Nov. 22 WITH the belief that unless crude oil production at Santa Fe Springs is kept below the 175,000 barrel mark the price structure will suffer another slash, operators there are bending every effort toward bringing the few non-cooperating operators into line.

New completions, coming at a time when each operator had beaned his existing wells to their lowest possible output, caused several operators to show excess production that could not be erased, in some cases, even though no oil was produced from the particular lease during the second two week period, from Nov. 16 to 30.

From Nov. 18 to 21, daily average production at Santa Fe Springs was estimated to be in excess of 162,000 barrels and it was feared that additional wells would boost the average daily yield to above the danger mark of 175,000 barrels.

New completions alone did not account for the excess. It was rather the attitude of one of the Independents who offered the excuse of contractual obligations as a reason for not curtailing his production the desired amount. In order to protect their holdings adjacent to this operator, other companies refrained from shutting in their offset wells. The result was that, like a rock thrown into a pool of water, the effect of the refusal of one operator to curtail was felt almost throughout the field.

Nov. 22, the daily output at Santa Fe Springs had been reduced to 153,623 barrels and it is expected that before the close of week ended Nov. 30, the average will be down to 150,000 barrels or less. Very few wells will be completed during the week, Nov. 23 to 30 as new wells show up as excess production on the umpires report. For this reason, wells will be put on production as near as possible to the end of the month.

While operators in the Signal Hill field have been unable to reduce their daily average production to the desired figure of 100,000 barrels, Umpire Neil Anderson is confident that the wells not as yet beaned in, due to mechanical or contractual obligations, will have their production curtailed during the coming week.

Umpire Anderson pointed out that the problem at Signal Hill was entirely different from that to be solved at Santa Fe Springs. In the former field there are 218 operating companies only six of which are of major size. Over 900 wells are producing at Long Beach and the majority of them are either pumpers or are on the compressor. A number of companies have only one or two wells.

Therefore, in issuing a cut of 45 per cent throughout the field due regard had to be taken of the interest of these small operators, who saw their bread and butter being taken from them. The small pumpers have very little gas pressure and have been producing at approximately the same rate for a period of years, so that the wells cannot be pinched back but must rather be shut in entirely.

Because of the age of a large number of the producing wells and because of the thinness of the oil sands, water encroachment offers a serious problem to small producers, or producers with flowing and pumping wells for if they are to curtail production it must be the flowing wells that are shut in, because otherwise the pumpers, when opened up, would show a decided increase in water content. This difficulty has been one of the outstanding objections to any form of curtailment that called for wells to be shut down.

SUPERIOR Judge Hazlett continued the hearing on the injunction sought by the state of California against operators in the Long Beach field until Dec. 17. This action was taken so that the Long Beach hearing would follow the hearing to be held before the Supreme Court of California Dec. 11 at which time definite action will be taken on the question of bringing necessary parties into the suit against Santa Fe Springs operators and, consequently, against operators in any other field in California.

Despite the fact that operators at Seal Beach curtailed their production to below 24,000 barrels, Nov. 4, new completions had boosted the output until it was estimated to have averaged 29,000 barrels for week ending Nov. 22.

At the continued hearing before the board of commissioners of the Ventura Avenue field, the commissioners issued an order amending the original order drawn up by the state oil and gas supervisor. In the amended order it was provided that no fixed oil to gas ratio should be ordered for the Ventura Avenue field, but that the companies should be allowed to produce oil and gas in that field so long as not more than 10 per cent of the gas used in any way in the field should be wasted.

It has been estimated that the legitimate gas outlet for the field amounts to about 160 million cubic feet daily during the winter months and over 110 million cubic feet during the summer. This would allow a wastage of from 11 million to 15 million cubic feet of gas per day, a figure that is not considered excessive.

OSCAR HOWARD, an Independent operator in the Santa Fe Springs field, evidently tired of recent failures to bring the record of the deepest well to California and in order to make a test for oil below the present producing level, is drilling his No. 7 well below 8900 feet in brown shale streaked with oil sands.

Operators are optimistic over the possibilities of obtaining a commercial producer in Howard's deep test. Unless mechanical difficulties develop, a production test will be made within the coming week or ten days.

The Texas Co.'s Patterson 10-A, that developed a fishing job after having been drilled to 8535 feet, has been plugged back to 8100 feet and an effort will be made to side track the lost core barrel.

Considerable interest on the part of California operators was aroused by a new location made by Standard Oil Co. of California. Standard has leased 255 acres in Casitas Pass, three miles northeast of Carpenteria on the Shepard ranch. Production of a commercial nature has long been sought in the neighborhood of Carpenteria, but although high gas pressures were found, oil has not been produced in commercial quantities. Continental Oil Co. drilled two wells on the shore line, southeast of Carpenteria its Franklin 1 and Baillard 1.

Continental abandoned its Franklin well, when it failed to show a trace of oil although having an excessive gas pressure, and has just recently suspended operations in the Baillard 1. It is rumored that Continental will spud in a new well on the very

edge of the Pacific Ocean in an effort to discover the oil field that is thought to exist in the vicinity of Carpenteria.

Pacific Western Oil Co. completed its Goleta 1 on the mainland at Elwood for an initial production of 4217 barrels of 37 gravity oil, from a depth of 3683 feet. This well is the farthest west of any mainland well at Elwood and it is estimated to have proven up approximately 60 additional acres.

A group of Independent operators will attempt to secure greater production than that found in the main Elwood field by drilling out into the ocean on tideland permits that extend to the west of the Spaulding well the most westerly producing tideland well.

Dudley Ridge Oil Co. is making preparations to complete its second gasser in the flat along the east base of Kettleman Hills and west of the dry Lake Tulare. This well located in Section 7, 23-20 is standing cemented at 1734 feet with the bottom of the hole at 1880 feet. It is believed that some oil may be obtained as the core barrel shows approximately 300 feet of gas sand with a slight cut of oil.

The company's first well, 500 feet from No. 2, blew in from a depth of 1140 feet and completely destroyed the derrick before it could be controlled. It is now flowing through a Christmas tree, making about 35 million cubic feet of gas per day, which is being piped to the nearby town of Kettleman City for domestic use.

No developments have been announced by the Ohio Oil Co. in its Smith 1 on the South dome of Kettleman Hills. The well at latest reports was drilling below 7385 feet in hard gray sand with no showing of oil.

On the Western Front

By Jack N. Westsmith
Los Angeles

DANIEL J. MORAN, president, Continental Oil Co. during his recent visit to the company's California office made an extensive study of California operations. Although Mr. Moran arrived in California on a Sunday Nov. 10, it is reported that the office force was on hand to greet him and a great week of work followed.

* * *

Harry W. Berdie, purveyor of news for Richfield Oil Co., left Los Angeles recently for a visit to the offices of the company in New York. He will also take in the annual convention of the American Petroleum Institute at Chicago.

* * *

Cities Service Petroleum Co., Ltd., subsidiary of the H. L. Doherty interests, has become a potential producer in California by the acquisition of 160 acres near Coalinga in the NW of 26,20-16 and all of Sec. 1,21-16. The smaller parcel of land is two miles east of Petroleum Securities Ladd well on section 28.

This move is evidently prompted by a desire to secure protection in case a commercial producer is obtained in the Ladd well, as no active drilling will be started at present.

* * *

R. E. Collom, general manager of Continental Oil Co.'s California office, is recovering from a serious illness that has kept him away from his office for nearly two months, the illness resulting from applying himself too closely to business. If the improvement continues Mr. Collom expects to return to work early in December.

* * *

V. H. Kelly, for the past nine months chairman of the sales committee for the Union Oil Co., was recently appointed to the newly created position of manager of domestic distribution.

Hailing from the northwest, where "men are men and oil ain't" Mr. Kelly, 16 years ago, entered the oil industry as salesman in Tacoma. After three years of hard work he was made special agent in Seattle and then became manager of the Portland district. Last January, after having served as manager of the northern division since 1922, he came to Los Angeles as chairman of the sales committee.

* * *

W. F. Lewis, formerly vice chairman of the sales committee, has been appointed manager of the Los Angeles district for the Union Oil Co. This appointment follows a period of rapid advancement made by Mr. Lewis since his entrance into the company's employment 15 years ago.

* * *

Victor W. Killick, for the past four years statistician for the Los Angeles County Sheriff's office and formerly statistician of the Independent Petroleum Marketers Association has been appointed to a new position with the State of California.

Mr. Killick will have charge of a Bureau that will compile information to do with administration, research matters, statistics and public relations, with offices located at Sacramento, California.

He is one of the pioneer oil statisticians on the Pacific Coast and it was largely due to his efforts that the U. S. Bureau of Mines statistical service was established at San Francisco.

* * *

Col. J. C. Thorn, general manager of the California-Thorn Cordage Co. Inc. recently returned from a business trip to New Orleans via Houston, Tex.

W. F. Lewis

V. H. Kelly

Completions in Oklahoma and Kansas, Week Ended November 23, 1929

OKLAHOMA

Carter County

Company	Well No.	Location	Depth	Init. Prod.
Merrick et al	3	NWc SW 20-1-3 W	T.D. 3830	Dry

Cotton County

Shasta	7	SEc NW NE NE 2-2-10 W	2179-2198	75
Franklin	4	CSL SW SE 35-1-10 W	2145-2192	125
Baldwin-Sultan	5	NEc SW SE SE 35-1-10 W	2160-2190	60

Creek County

Sooner	5	CWL SE SW 12-17-11 E	1171-1205	½M
Link	4	NEc SW NE 33-18-7 E	1383-1464	10
Magnolia	1	NEc NW NE 7-18-7 E	2522-2580	30
Pioneer	5	NW SW NE 15-19-9 E	2224-2238	2½M
Sheridan	2	C SE SE 33-16-11 E	2009-2049	60
Magnolia	2	CWL NE NW 3-16-7 E	T.D. 2953	Dry
Gem	1	SE NE SE 7-17-8 E	T.D. 3365	Dry
McCullough	1	NWc 21-19-9 E	T.D. 2848	Dry

Grady County

Okla. Public Serv.	3	NE SE NW 2-4-8 W	2135-2400	10M

Hughes County

Troutt Drlg	1	C NW NW 5-8-11 E	T.D. 1604	Dry

Jefferson County

Bridwell	1	NWc SW NW 29-6-5 W	T.D. 2209	Dry
Superior	1	SW SE SE 2-7-7 W	T.D. 3914	Dry

Latimer County

Limestone	1	SWc 15-5-18 E	2518-2550	5M
LeFlore County	4	SW NE NW 11-6-22 E	1578-1840	10M
LeFlore County	6	SW NW SW 11-6-22 E	1776-1903	4M
LeFlore County	5	SE NE NE 10-6-22 E	1461-1719	10M

Logan County

Shell	11	NW SW SE 30-19-4 W	5938-5975	1770
Shell	12	SW NW SE 30-19-4 W	5945-5981	1645

McIntosh County

Spring Valley	1	SEc NE NW 16-10-13 E	2390-2400	½M

Muskogee County

Bryan	9	CSL N½ NE 8-15-15 E	1847-1859	3½M
Aggas	3	SE NW SE 28-16-15 E	1505-1508	2M
Mussellem	2	CSL NE NE 4-13-19 E	T.D. 1515	Dry

Okfuskee County

Foster et al	1	CNL NW SW 30-11-11 E	T.D. 3855	Dry
Sunray	1	NWc NE 30-13-9 E	T.D. 4193	Dry
Mid-Continent	1	NEc SW 31-11-11 E	3088-3093	17M
Independent	1	SWc NW 22-12-11 E	3443-3461	220
Inglehart	1	NE SE NW 28-9-10 E	2320-2780	15M

Okmulgee County

Swindler	1	C NW SE 20-15-13 E	1987-1997	20

Osage County

Okla. Power & Water	126	NW NE NW 9-20-10 E	439-445	10M
Okla. Natural	1741	CNL SW SW 3-21-12 E	1345-1370	¼M
Texas	2	SW NW SE 22-24-7 E	2943-2987	200
Peters et al	1	SEc NE 10-26-8 E	2231-2232	120
Peter et al	4	SW NW NE 27-27-11 E	1000-1040	40
Peters	8	NEc SW SE 22-27-11 E	1695-1711	70
Peters et al	5	SE SW SW 22-27-11 E	1686-1706	85
Peters et al	4	SEc SW SW 22-27-11 E	753-771	11
Peters	1	NWc NE 9-20-10 E	T.D. 2223	Dry

Payne County

Cons. Drlg	1	SWc 4-18-6 E	T.D. 3698	Dry

Pittsburgh County

Lester	1	NEc NW 15-7-18 E	1843-1969	15M

Pontotoc County

Homaokla	5	SEc 1-4-7 E	2032-2039	30

Pottawatomie County

Superior	2	SW NW NW 8-9-5 E	4355-4379	700
Gypsy	5	NW NE SE 17-7-4 E	3977-4000	4535
Indep. et al	2	SE SW NE 15-7-4 E	4220-4263	207
I. T. I. O.	4	SWc SE 35-8-4 E	4180-4282	105
Slick	3	NWc SE 19-6-4 E	T.D. 3820	Dry

Seminole County

Company	Well No.	Location	Depth	Init. Prod.
Independent	1	NW NE SW 9-7-7 E	T.D. 4533	Dry
Continental	3	NW SE NW 18-9-7 E	T.D. 830	Dry
Amerada	1	NWc SE 32-9-6 E	T.D. 4413	Dry
Carter	5	NWc 24-7-6 E	3209-3287	8M
Magnolia	1	SE NE NE 18-9-6 E	4388-4408	525
Magnolia	12	NE SE NE 18-9-6 E	4309-4326	210
Magnolia	8	NE SW NE 18-9-6 E	4293-4298	258
Texas	1	SW SE NW 13-5-7 E	4260-4286	595
Magnolia	1	SE NE SE 12-6-7 E	4128-4131	720

Stephens County

Magnolia	1	NE SE NE 8-2-6 W	2983-3008	39M
Meridian	1	C NE NE 12-1-9 W	T.D 3000	Dry

Tulsa County

Bingham-Fleetwood	1	NWc SW SE NE 24-17-14 E	1802-1804	60

Wagoner County

Orr	1	NWc SE 34-17-18 E	409-420	1M
Knox-Shouse	1	SEc SW NE 18-17-16 E	977-992	1M
Western Drlg. & Equip.	1	SWc SE 15-16-19 E	T.D. 850	Dry
Keener	1	SEc SW SE 33-17-19 E	T.D. 786	Dry
Striker	3	NEc SW 29-18-16 E	T.D. 804	Dry

KANSAS

Butler County

Richman-Reigle	2	NEc SW 8-27-6 E	2768-2772	15
Alladin	1	SWc NE 24-27-3 E	2975-3025	100
Marland	1	SW NE SW 19-27-4 E	T.D. 3064	Dry

Coffey County

Shaffer-Howell	1	CSL SE 12-23-14 E	T.D. 1644	Dry
Young et al	1	SEc NE 11-23-14 E	T.D. 1625	Dry

Cowley County

Trees	1	CEL SE NW 12-34-6 E	T.D. 1161	Dry
Shawver et al	6	C NE NE 17-34-3 E	T.D. 1963	Dry
Foster et al	1	SEc NW 27-33-3 E	T.D. 3803	Dry
Slick-Pryor-Lockhart	1	NW NE SE 25-30-5 E	T.D. 2974	Dry
Roth-Faurot	1	SWc SE 7-32-5 E	T.D. 3564	Dry

Dickinson County

Millmack	1	NW SW NE 28-16-4 E	T.D. 3001	Dry

Elk County

Pure	7	NW SW SE 14-31-10 E	1391-1401	OWD 15

Greenwood County

Roth-Faurot	1	SEc NE 30-23-10 E	2358-2363	20
Independent	1	NEc NW 28-23-11 E	1918-1988	10
Houston-Oklahoma	6	CEL SW SW 11-24-12 E	1720-1731	70
Walton	1	SW NW NW 7-24-13 E	1638-1654	25
Elk River	1	NWc 20-27-11 E	T.D. 2014	Dry
Mendenhall et al	2	CNL NE SW 9-25-13 E	T.D. 1760	Dry
Empire	3	NE SE SW 21-23-11 E	T.D. 1995	Dry
Simmons et al	1	SEc NE 32-22-12 E	T.D. 1940	Dry
Bisagno et al	3	CSL SW NE 9-25-13 E	T.D. 1650	Dry

Marion County

American	1	SWc NW 10-17-3 E	T.D. 3105	Dry

McPherson County

Helmerick-Payne	1	SE NE NE 14-21-1 W	T.D. 3562	Dry
Lario et al	1	SEc SW 10-20-1 W	T.D. 3453	Dry

Russell County

Texas	2	NW SW SW 31-12-15 W	2978-2983	75
Midwest Explor	18	SW NW NW 31-12-15 W	3057-3095	385

Sedgwick County

Bu Vi Bar et al	6	SEc NW SE 1-26-1 W	3356-3359	1595
Shell	4	SWc NW SE 15-26-2 E	2921-2926	125
Sinclair et al	1	NW NE NE 3-26-2 W	T.D. 3955	Dry
Reynolds-Rogers	1	SE SW SE 26-25-1 W	T.D. 2575	Dry

Sumner County

Bu Vi Bar et al	1	NEc NW 27-34-2 W	T.D. 4564	Dry

Completions in California, Week Ended November 16, 1929

Elwood

Company	Well No.	Location	Depth	Init. Prod.
Bankline Oil Co	Bell Tideland Permit 89-1	....	3600	3300

Huntington Beach

Sunset Pacific Oil Co.	Bolsa Chica 6	....	4629	200

Long Beach

Hancock Oil Co	Signal 19	....	7315	450
Lindiver Oil Co	No. 2	....	6928	925

Maricopa Flats

Hancock Oil Co	Maricopa 2	....	2995	1800

Midway

Company	Well No.	Location	Depth	Init. Prod.
Chanslor-Canfield Midway Oil Co.	No. 85	....	2960	500

Santa Fe Springs

General Pet. Corp.	S. F. 129	....	6829	1614
Getty, George F, Inc.	No. 33	....	8000	2008
Richfield Oil Co	Wardman 1	....	7333	854
Universal Oil Co	Blanchard 1	....	7900	1300

Summerland

Getty, George F. Inc.	Becker Fee 2	....	1459	80

Ventura Avenue

Associated Oil Co	Lloyd 26	....	6900	1311

New Field Operations in Oklahoma, Kansas, North, North Central, East Central, Panhandle and West Texas, Week Ended November 23, 1929

OKLAHOMA

Caddo County

Company	Well No. & Farm	Location
Caddo	1-Estes	C SW SW 33-6-9 W OWD
English Drlg	3-Abernathy	NWc SE SE 31-6-9 W OWD
Noble-Olson	3-Rowe	SWc NW SE NE 36-6-10 W
Magnolia	3-Niles	SEc NE NW 36-6-10 W OWD
Magnolia	7-Rowe	NWc SW NE 36-6-10 W
Magnolia	6-Rowe	SEc NE SW NE 36-6-10 W
Louisiana	1-Rowe	SWc NW NE 36-6-10 W OWD

Carter County

Magnolia	5-Gill	NE SE NE 23-1-3 W

Cotton County

Franklin	5-Chambers	C SW SE 35-1-10 W
Shasta	3-Cobb	CNL S½ NE 2-2-10 W
Razor et al	3-Chambers	SEc SW 35-1-10 W
Barnsdall	16-Keys	NEc SE NE SW 33-1-10 W

Creek County

Company	Well No. & Farm	Location
Atlantic	1-Reynolds	SWc NW NE 16-14-10 E OWD
Wolcox et al	1-Johnson	SW NW SE 6-14-10 E
Skelly	1-Foster	NEc SE SW 30-15-9 E OWD
Reiter-Foster	2-Littlehead	CSL SW SE 17-17-10 E
Ireland et al	2-Hay	NWc NE NE SW 3-17-10 E
Holmes-Button	1-Cook	NWc NE 14-18-9 E
Foster et al	1-Hinton	NEc SE SE 26-19-8 E

Hughes County

Independent	1-Brown	SE SW NE 18-9-9 E

Kay County

DeCamp et al	1-Warren	C SW NW 30-28-1 E

Lincoln County

Magnolia	1-Meyers	NW NE NE 17-14-4 E

Marshall County

Cox-Hamon	1-McComas	NW SW SW 13-5-5 E

(Continued on Page 55)

New Field Operations in Oklahoma, Kansas, North, North Central, East Central, Panhandle and West Texas, Week Ended November 23, 1929

(Continued from Page 54)

Muskogee County

Company	Well No. & Farm	Location
Ray et al	1-Foreman	SEc NE SW SE 15-13-18 E
Metzger et al	2-Taylor	NWc SE 14-14-18 E
Jolly	4-Cherry	NEc NW 2-14-18 E
Metzger et al	11-Francis	SEc SW NW SW 1-14-18 E

Okfuskee County

Twin State	1-Crumme	SWc NE 32-12-10 E

Okmulgee County

Hennessey	1-Fee	NEc SE SW 9-13-14 E
Burns	4-Stevens	C SE SE 1-14-12 E OWD
Campbell-Cochran	1-DePriest	NEc 19-15-13 E
Kirkland-Son	2-Gibson	NEc SW NE 17-15-13 E
Kirkland-Son	2-Carr	SWc NW SW 17-15-13 E

Osage County

I. T. I. O.	4	NEc SW SW 28-23-9 E
I. T. I. O.	424	SEc SW SE NW 8-24-9 E
Peters	3	NW NE NW 27-27-11 E
Barnsdall	6	NE SE NE 27-22-10 E OWD

Payne County

Reiter-Foster	1-Finnell	C NE NW 8-19-1 W

Pawnee County

Bartlett	2-Fleming	SEc 15-20-9 E
Capitol Hill	2-Green	SE NE SE 25-21-8 E

Pittsburgh County

Midwestern	1-Colton	SE SW SE 9-7-18 E

Pontotoc County

Benedum-Trees	7-Mole	SE SW SW 51-5-5 E
Homaokla	7-Ritchie	SW SE SE 1-4-7 E
Payne-Clark	2-Shields	SWc SE 20-5-8 E

Pottawatomie County

Skelly	3-Decker	SE SW SW 16-7-4 E
Amerada	2-Richardson	SW SE SW 16-7-4 E

Seminole County

Pure	5-Harjo	NEc SW NE 11-7-6 E
Carter	7-Jackson	SE NW NE 11-7-6 E
Tidal et al	2-Lasley	NW SW SE 19-9-6 E
Carter	1-Empire	NEc SW 16-9-6 E
Carter	4-Harber	SE SW SE 7-9-6 E

Stephens County

Magnolia	4-Hanson	SW SE NW 12-1-4 W
Amerada	7-Hanson	NW NE SW 12-1-4 W
Amerada	6-Hanson	NE NW SW 12-1-4 W
Atlantic	4-Taylor	SE SW NW 12-1-4 W
Magnolia	1-McClure	NEc 19-1-8 W
Slick	1-Blake	NEc SW SW 16-1-8 W

Tulsa County

Lockhart et al	1-Childers	CSL SE SW 28-17-14 E

Wagoner County

Union	1-McKellop	NWc NE NW 25-18-15 E
Bauder	1-Scherlay	SEc NE 7-18-15 E

KANSAS

Butler County

Empire et al	1-Marshall	SE NE SW 11-27-5 E

Cowley County

Croux et al	3-Powers	SWc NW 9-32-5 E
Lewis Prod. et al	1-Fitzgerald	NW NE SW 20-31-6 E
Mission	1-Martin	C NW NW 21-31-6 E
Hull et al	16-Wallace	NW NE SE 24-32-4 E

Dickinson County

Cress et al	1-Sanders	NEc 12-15-2 E

Ellis County

Vickers	1-Watson	C SE 30-15-20 W

Greenwood County

Balliere et al	1-Barnard	SWc NE 32-22-10 E
O'Neil et al	1-Brinn	NW NE NW 34-22-11 E

Lyon County

Gordon-Staats	1-Bochl	NE SE NW 16-17-10 E

McPherson County

Gypsy	1-Kinney	NE NW SW 34-20-3 W
Slick-Pryor-Lockhart	1-Stuckey	SE SW SW 27-20-3 W

Rice County

Tatlock et al	1-Plogg	C SW SE 33-18-9 W

Sedgwick County

Davis	1-Arsdale	SE NW SE 14-27-1 W
Dixie-Amerada	1-Foulston	NEc SW SW NW 11-26-2 E
Bu Vi Bar et al	4-Lyons	NWc NE NW SW 7-26-1 E
Reynolds-Rogers	1-Updegraff	SE SW SE 26-23-1 W

TEXAS
NORTH CENTRAL & EAST CENTRAL

Brown County

Warren	3-Truehart	Blk-638	Lamar
French et al	1-Belrin	Sec-42	Chaddick
Michael-Gibson-Johnson	1-Hickman	.....	Kinsey
Young Bros.-Alexander-Woodley	23-Hickman	Blk-801	McGloin
Ven-Mex	1-Butler	Blk-798	McGloin
Humble	4-Hickman	.....	Kinsey
Humble	A10-Kilgore	Sec-3 Blk-789	Delgado
Humble	B17-Kilgore	Sec-3 Blk-789	Delgado

Coleman County

Stepp-Vandeveter	1-Shore	Sec-72 Blk-1	GH&H
Continental et al	6-Overall	Blk-701	Barkley
Taylor-Link	2-Stewardson	Sec-91	ET
Atlantic	1-Overall	Sec-9 Blk-1	GH&H

Callahan County

Testerman	5-Alvey	Sec-2272	TE&L
Warren et al	3-Biggerstaff	Sec-310	SP
Hudson-Steward-Robinson	1-Webster	.....	Hickman
Roberts et al	1-Isenhower	Sec-2273	TE&L
York	5-Kill	Sec-2280	TE&L
Campbell	1-Windham	.....	Mrs. Ben Hill
Basom	1-Ross	Sec-98	BBB&C
Brehill	1-Coppinger	.....	Anderson No. 777

Concho County

Lamb	1-Mosley	Blk-1838	Bachman

Eastland County

Company	Well No. & Farm	Location	
Hoffman-Page	4-Foster	Sec-27 Blk-2	H&TC
TPC	3-Durocher	.....	Durocher

Jack County

Parks	1-Lanier et al.	Blk-5	BBB&C
Panhandle	3-Daniels et al.	.....	Hughson

Palo Pinto County

Walker	1-Smith	.....	Burleson City Sch. Ld.
Wickens et al	1-Ames	.....	Burleson City Sch. Ld.

Shackleford County

Cranfill-Reynolds-Skelly	1-Mathews	Sec-31	ET
Robinson	1-Black	Sec-508	TE&L
Frizzell-Smalley	3-Alexander	Sec-580	TE&L
Humble	20-Cook	Sec-84	ET

Stephens County

Grantor	37-Swenson	Sec-5	OAL
Hefflin-Bartrug	1-Mitchell	Sec-64	T&P
Lone Star	1-Ellis	.....	Bailey Heirs

NORTH TEXAS

Archer County

Perkins-Cullum et al.	1-Hamilton	.....	BBB&C
United Prod	4-Kunkel	.....	Stell
Hines	1-Morrison	Sec-2403	TE&L
Golding-Cochran et al.	1-Kiche	Blk-25	Meade
Burns et al	1-Parrish	Sec-106 Blk-2	ATNCL
Haynes et al	1-Hammie	Sec-61 Blk-3	Clark et al.
Barnsdall	18-Wilson	.....	Howard
Burns	3-Wilson	Sec-115	ATNCL
Atlantic-Johnston	3-Prideaux	Sec-1860	TE&L
Pandem	1-Young	Sec-2426	TE&L

Baylor County

Consolidated	2-Portwood	Sec-3138	TE&L

Clay County

Mayfield et al	1-Mason	Blk-30	Madison Co. Sch. Ld.

Cooke County

Danciger	16-Huggins	.....	SP
Kewanee	2-Franklin	.....	Rodriguez
Benson Bros	1-Felderhoff	.....	Anderson

Wichita County

Merrick Drlg. et al.	1-Wigley	.....	CT
Bridwell	5-Burnett	Sec-3	HT&B
Panhandle	13-Burnett	.....	Meade
Texas	13-Waggoner	Blk-29	George
Ryan	111-Nance	.....	Fowler
Texas	370-Waggoner	Sec-1	GC&SF

Wilbarger County

Bradstreet	G1-Waggoner	Sec-17 Blk-5	H&TC
Texas	366-Waggoner	Sec-7 Blk-13	H&TC
Cosden	D5-Waggoner	Sec-35 Blk-2	H&TC
Waggoner	P3-Waggoner	Sec-35 Blk-2	H&TC
Waggoner	P4-Waggoner	Sec-35 Blk-2	H&TC
Fain-McGaha	L16-Waggoner	Sec-31 Blk-4	H&TC
Bradstreet	C5-Waggoner	Sec-31 Blk-4	H&TC
Staley-Wynne	E7-Waggoner	Sec-25 Blk-4	H&TC
Staley-Wynne	E8-Waggoner	Sec-25 Blk-4	H&TC

Young County

Riggs-Williams	1-Van Meter	Sec-177	TE&L
Wise-Jackson	5-Cullers	.....	Hyatt
Richardson et al	2-Dean	Blk-19	YCSL
Woolen et al	1-Casey	.....	Casey
Perkins-Cullum	1-Deitrich	.....	Stell
Wolfe	2-Hill Est.	Sec-195	TE&L
Collier	10-Fee	Blk-21	YCSL

PANHANDLE

Carson County

Continental	2-Black	Sec-111 Blk-4	I&GN
Empire	22-Burnett	Sec-98 Blk-5	I&GN

Gray County

Texas	18-Saunders	Sec-3 Blk-1	ACH&B
Texas	19-Saunders	Sec-3 Blk-1	ACH&B
Gulf Prod	3-Saunders	Sec-3 Blk-1	ACH&B
Gulf Prod	1-Barrett	Sec-131 Blk-3	I&GN
Wilcox	10-Wilcox et al.	Sec-35 Blk-3	I&GN

Hutchinson County

Jones et al	1-Jasper	Sec-23 Blk-M-23	TC

WEST TEXAS

Brewster County

Grastorf et al	1-Trans-Pecos Oil Co.	Sec-18 Blk-G-15	GC&SF

Howard County

Ward	19-Roberts	Sec-137 Blk-29	W&NW
Ward	18-Roberts	Sec-137 Blk-29	W&NW
Ward	17-Roberts	Sec-137 Blk-29	W&NW
Ward	16-Roberts	Sec-137 Blk-29	W&NW
Continental	2-Clay	Sec-127 Blk-29	W&NW
California	5-Roberts Lse-1	Sec-137 Blk-29	W&NW
Merrick-Lamb	11-Clay	Sec-126 Blk-29	W&NW

Irion County

Cromwell	1-Fuller	Sec-81 Blk-1	H&TC

Pecos County

Landreth Prod.	12-Univ.	Sec-24 Blk-18	Univ.
Landreth Prod.	B6-Univ.	Sec-13 Blk-18	Univ.
Taylor-Link	10-Univ.	Sec-13 Blk-18	Univ.
Henshaw et al	2-Univ.	Sec-13 Blk-18	Univ.
Henshaw et al	3-Univ.	Sec-13 Blk-18	Univ.
Henshaw et al	4-Univ.	Sec-13 Blk-18	Univ.
Humble	12-Smith	Sec-36 Blk-194	TC
Landreth Prod.	D3-Univ.	Sec-31 Blk-16	Univ.

Ward County

Sun	1-Sealy	Sec-88 Blk-F	G&MMB&A

Winkler County

Humble	B2-Walton	Sec-47 Blk-26	PSL
Sun	2-Sealy	Sec-52 Blk-F	G&MMB&A

Completions in Texas, Week Ended November 23, 1929

NORTH CENTRAL & EAST CENTRAL

Anderson County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Pure	6-Jackson	Kinley	T.D. 5836	Dry

Brown County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Diggs	1-Counts	Floss Blk-614	T.D. 130	Dry
Gordon	1-Whiteside	Banister Blk-627	T.D. 880	Dry
Gulley	1-Armstong	H&GN Blk-1	T.D. 1400	Dry
Jordon Bros	1-Sears	Ross Blk-610	T.D. 915	Dry
Murray et al	1-White	Jennings Blk-353	T.D. 1203	Dry
Owens Inc. et al.	7-Cannon	Arenbeck Blk-3	T.D. 1172	Dry
Paramount	1-Sears	Phillips Sec-10	T.D. 955	Dry
Paramount	1-Willis	Vance	T.D. 1425	Dry
Bowers et al	2-Giddings	Clelland Blk-63	1535-1557	5
Humble	1-County State Land	Carter	1272-1292	67
Humble	9-Kilgore	Delgado Sec-3 Blk-789	1121-1158	40
Sawyer	1-Turner	Duncan Blk-55	1605-1610	5 4/5M
Texas	4-Johnson	Nix	1316-1319	200

Callahan County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Testerman	4-Alvey	TE&L Sec-2272	430-436	1½

Coleman County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
White Eagle	32-Morris	Webber Sec-26 Blk-722	2020-2034	250
May et al	1-Brooks	Walker Blk-4	T.D. 1409	Dry
Peruvian et al.	5-Crowder	Woods Blk-483	T.D. 2061	Dry

Eastland County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Warner Quinlan Co. of Tex.	1-Stamps	H&TC Sec-88 Blk-4	T.D. 3756	Dry
Bearman	1-Kincaid et al.	H&TC Sec-80 Blk-4	3476-3488	150
Grose	1-Dunham	H&TC Sec-10 Blk-2	919-926	7
Page	3-Lyerla	H&TC Sec-27 Blk-2	1281-1290	18

Falls County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Killam-Phillips	4-Jones Est.	Hampton	T.D. 1630	Dry

Jack County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Osage	1-Newman	Overly	T.D. 3660	Dry
Panhandle	1-Daniels	Hughson	3091-3095	203

Shackleford County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Frizzell-Smalley	1-Alexander	TE&L Sec-580	880-881	15
Moutray	1-Nail	ET Sec-40	T.D. 1204	Dry
Big States	13-Webb et al.	T&P Sec-17 Blk-11	T.D. 1016	Dry
French et al	1-Dawson et al.	ET Sec-161	T.D. 1745	Dry

NORTH TEXAS

Archer County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Carter et al	1-Scott	James	T.D. 1257	Dry
Key-Leath	1-Logan	Taylor	T.D. 1253	Dry
Payne-American Ref.	1-Wilson	ATNCL Sec-114 Blk-1	T.D. 1501	Dry
Peacock-Tedford	1-Williams	Swing	T.D. 579	Dry
Stumpf et al	1-Moss	HT&B Sec-1	T.D. 1801	Dry
Burns	2-Wilson	ATNCL Sec-115	T.D. 1465	Dry

Cooke County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Kewanee	1-Pembroke	SP	T.D. 1702	Dry
Danciger	15-Huggins	SP	1076-1112	53

Montague County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Wood-Lesh-McCalf	1-King	Burside	T.D. 2741	Dry

Wichita County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Comac Drlg.	2-Moran	Meadows	T.D. 1657	Dry
Merrick Drlg. et al.	1-Fisher	Collins Sec-24	T.D. 1999	Dry
Ryan	110-Nance	Fowler	T.D. 517	Dry
Golding-Cochran	B1-Waggoner Bros.	George Blk-30	1435-1436	20

Wilbarger County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Bradstreet	C2-Waggoner	H&TC Sec-31 Blk-4	2387-2394	70
Cosden	D4-Waggoner	H&TC Sec-35 Blk-2	2647-2675	600
Empire	A15-Waggoner	H&TC Sec-32 Blk-4	1845-1871	57
Empire	A16-Waggoner	H&TC Sec-32 Blk-4	2250-2280	150
Empire	A17-Waggoner	H&TC Sec-32 Blk-4	2289-2290	165
Empire	B24-Waggoner	H&TC Sec-32 Blk-4	2275-2298	114
Simpson-Fell	A14-Waggoner	H&TC Sec-36 Blk-2	2667-2672	123
Waggoner	J12-Waggoner	H&TC Sec-25 Blk-4	2387-2392	90
Empire	C9-Waggoner	H&TC Sec-25 Blk-4	T.D. 2617	Dry
Grayback Dev.	2-Waggoner	MEP&P Sec-40	T.D. 1876	Dry

Young County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Gose-Waggoner	1-Inman	Kimbs	T.D. 653	Dry
Holbrook-Woods	6-Dean	YCSL Blk-19	T.D. 550	Dry
Madden-Hunt	2-Kunkel	Stell	T.D. 1177	Dry
Reed-Woolen et al.	1-Fisher	Casey	T.D. 745	Dry
Smith-Chandler	1-Loftin	Bussey	T.D. 738	Dry
United Prod	3-Kunkel	Stell	T.D. 1174	Dry
Panhandle	4-Prideaux	I&GN	T.D. 733	Dry
Texas	3-Stewart	BBB&C	T.D. 763	Dry
Shaw et al	1-Roark	Rogers	T.D. 4235	Dry
Nix-Stumpf	1-Bailey	TE&L Sec-165	865-886	40
Parks et al	2-Cullers	Stinnett	543-573	20
Wise-Jackson	4-Cullers	Hyatt	583-593	15
Wolfe	1-Hill-Est.	TE&L Sec-195	1033-1034	27
Long et al	1-Williams	Walker	2386-2395	140

PANHANDLE

Carson County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Texas	2-Noel	I&GN Sec-187 Blk-3	3165-3291	120
Ryan Cons.	5-Black	I&GN Sec-111 Blk-4	3031-3094	300

Gray County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Sun	4-Purviance	H&GN Sec-61 Blk-B-2	2950-2960	1700
Humble	4-Jackson	H&GN Sec-90 Blk-B-2	2945-2950	180
Dunlop	3-Morse	H&GN Sec-2 Blk-26	T.D. 2612	Dry

WEST TEXAS

Crane County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Duffey	6-Cowden	CCSD Sec-18 Blk-X	2489-2490	120 (12 Hrs.)

Ector County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Penn et al	1-Kloh	T&P Sec-7 Blk-44	3720-3744	215

Fisher County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Texas	1-Stephens	H&TC Sec-79 Blk-1	T.D. 3315	Dry
Tulsa Oil Co	1-Griffin	Bastrop Co. Sch. Ld. Sec-29 Blk-323	T.D. 3503	Dry
Raney et al	2-Moberry	H&TB Sec-56 Blk-1	T.D. 3507	Dry

Glasscock County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Landreth Prod. -Tidal	1-Houston	T&P Sec-29 Blk-35	T.D. 3465	Dry
Smith	1-Coffee	T&P Sec-15 Blk-33	2183-2255	1440
Schermerhorn	2-Phillips	T&P Sec-23 Blk-33	2406-2407	800

Howard County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Continental	4-Kloh et al.	T&P Sec-13 Blk-33	2208-2230	40 (1 Hr.)
American-Maracaibo	3-Settles	T&P Sec-6 Blk-32	2248-2256	960 (16 Hrs.)
Ward	15-Roberts	W&NW Sec-137 Blk-29	1350-1381	30
Amerada	13-Roberts	W&NW Sec-128 Blk-29	1312-1325	7
Merrick-Lamb.	9-Clay	W&NW Sec-126 Blk-29	3144-3230	45

Irion County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Cromwell et al.	1-Nutt	Gonzales Co. Sch. Ld.	1473-1480	40
Fox-Miller	1-Tankersley	Resig Sec-711	T.D. 1475	Dry
Fuhrman	1-Nutt	Gonzales Co. Sch. Ld.	T.D. 1495	Dry
Simms	1-Carter	H&TC Sec-87 Blk-1	T.D. 1952	Dry

Nolan County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Bradstreet et al.	1-Keiterman	T&P Sec-95 Blk-X	T.D. 4024	Dry

Pecos County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Condor	1-Wangerin Est.	H&GN Sec-52 Blk-11	T.D. 1665	Dry
Milham	1-McDonald	H&GN Sec-46 Blk-12	T.D. 1651	Dry
Red Bank	1-Neville	H&GN Sec-40 Blk-12	T.D. 1775	Dry
Gibson-Johnson	1-Grace	TC Sec-3 Blk-179	T.D. 2065	Dry
Phillips	2-Courtney	TM Sec-78 Blk-OW	1395-1408	277
Cowboy Evans.	1-Pecos Valley Oil Co.	H&TC Sec-36 Blk-3	1556-1604	12
Pecos Crude	3-Pecos Valley Oil Co.	H&GN Sec-22 Blk-10	1610-1952	20
Landreth Prod.-World	2-Univ.	Univ. Sec-13 Blk-18	1602-1620	752
Landreth Prod.-World	3-Univ.	Univ. Sec-13 Blk-18	1600-1628	700
Landreth Prod.	2-Univ.	Univ. Sec-31 Blk-16	1633-1635	1377
Gulf Prod.	25-Yates	Runnells Co. Sch. Ld.	1218-1365	1420 (½ Hr.)
California	4-Smith Lse.-1	TC Sec-37 Blk-194	1377-1453	67 (1 Hr.)
Mid-Kansas & Transc.	19-Smith et al.	TC Sec-33 Blk-194	1640-1735	171 (1 Hr.)
Gulf Prod.	20-Smith	TC Sec-22 Blk-194	1510-1815	182
McMan.	8-Smith	TC Sec-25 Blk-194	1540-1649	50 (1 Hr.)
McMan	9-Smith	TC Sec-25 Blk-194	1648-1694	100
Mid-Kansas	3-Yates	I&GN Sec-59 Blk-1	1087-1165	137

Upton County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Gulf Prod.	2-Hughes	Tees Sec-4	2235-2311 P.B. 2278	90 (12 Hrs.)

Ward County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Atlantic-Penn	1-Bennett	H&TC Sec-16 Blk-34	2348-2618	186

Winkler County

Company	Well Farm	Survey Sec. & Blk.	Depth	Init. Prod.
Cromwell-Pickerell	2-Hutchins	PSL Sec-47 Blk-26	2864-3001	400

Completions in North Louisiana and Arkansas, Week Ended November 21, 1929

LOUISIANA

Caddo Parish—Pine Island

Company	Well	Location	Depth	Yield
Shreveport Oil Corp.	Hicks et al. No. 1	32-21-15	2108	75 bbls. oil
Shreveport Oil Corp.	Hicks et al. No. 2	32-21-15	2119	100 bbls. oil

Caddo Parish—Dixie

Company	Well	Location	Depth	Yield
T. C. Adams et al.	Dickson No. 1	10-19-14	2622	St. w. Abnd.
Eylers Oil Co.	Sentell No. 1	9-19-14	2501	Dry, abnd.
Fred M. Ryan	Dickson heirs No. 1	3-19-14	2500	Dry, abnd.
Texas Company	Hunter No. 6	9-19-14	2436	40 bbls.

Natchitoches Parish—Robeline

Company	Well	Location	Depth	Yield
Robeline C and C Co.	Cassady No. 1	7-8-9W	3230	junked, abnd.

East Texas—Panola County

Company	Well	Location	Depth	Yield
Ark.-Louis Pipe Line Company	L. Werner No. 7	Jordan HRS	967	¾M gas
Eureka Nat. Gas Co.	Jeter No. 1	Womack HRS	2980	5M gas

Arkansas—Miller County

Company	Well	Location	Depth	Yield
Lanz et al.	Person No. 1	15-15-26	3362	Dry, abnd.

Ouachita County—Smackover

Company	Well	Location	Depth	Yield
Skelly Oil Co.	Langley No. 1	35-15-15	2014	10 bbls. oil

Principles of Oil Field Development

Article II

Factors Governing Economic Spacing of Oil Wells

By Lester C. Uren
Professor of Petroleum Engineering, University of California

ONE of the most important unsolved problems confronting the oil-producing industry today, is that of so planning the development of an oil property as to realize the maximum possible profit to the producer. The importance of timely drilling of wells, one aspect of this problem, was discussed in the first article of this series.

This and the succeeding article will be devoted to a discussion of the principles and practice of well spacing, the present article reviewing the many factors that enter into the well-spacing problem, while the succeeding article will analyze some of the methods that have been suggested in searching for a practical solution.

Because of the great number and complexity of the variables that enter into this problem, most oil producers have been content to follow precedent, adopting some arbitrarily conceived spacing program that no doubt has, in many cases, resulted in lower profits than might otherwise have been secured. The development program is often dictated by some ill-advised neighboring operator, competitive considerations being uppermost rather than economic and scientific drainage principles.

In most fields, custom has decreed a certain spacing of wells, or the allowance of a certain drainage area per well, but investigation will show that in practically every case, in fixing the interval between wells, operators have merely followed a practice with which they had become familiar in other fields. A common interval between wells in many fields, for example, is 660 feet, but this merely resulted from the fact that one well in the center of each 10-acre tract provided such a spacing, and 10-acre tracts are convenient units in buying and leasing land.

If proper consideration is given to drainage principles and economic factors, this interval might be appropriate in some cases, but will be grossly in error in others. Casual inspection of the property maps in almost any oil field, will show that the average oil producer of today gives but little attention to this all-important problem. Indeed, it would appear that we know but little more about scientific well spacing today than did the pioneers of the industry two generations ago.

Factors Governing Economic Spacing of Wells

Before venturing into a discussion of actual field practice in well spacing, it will be important to review the many different factors that enter into the problem of determining the economic interval between wells, and to consider the effect of each. We may conveniently group the governing factors into two classes. The first of these groups, including the geologic and lithologic conditions, the expulsive and retentive forces governing flow of oil from the reservoir rock into the wells, we may call the physical factors. The second group, which we may call the economic factors, include all financial variables relating to production cost, selling price, profit and production efficiency.

THIS is the second of a series of five articles by Professor Uren, dealing with the problems of oil-field development. The first article of this series, on the influence of delayed development on ultimate recovery, was printed in NATIONAL PETROLEUM NEWS, issue of October 2, 1929. The topic of well spacing will be treated in two articles, of which this is the first. The second will appear in an early issue of NATIONAL PETROLEUM NEWS.

Magnitude of the Expulsive Forces

The drainage radius of wells, the efficiency of drainage, their rates of production and ultimate productions will be vitally dependent upon the energy available for expulsion of the oil from the reservoir rock. This energy is available from four possible sources: (a) the expansive force of compressed natural gas; (b) the pressure of "edge" water under hydrostatic pressure; (c) gravitational force; and (d) compaction of the reservoir rock. Of these, the expansive force of natural gas associated with the oil, is by far the most important in most cases.[1]

It is a matter of common knowledge, the result of repeated observation wherever petroleum is produced, that the rate of production diminishes as the field pressure declines. In the previous article of this series, it was shown that the initial productions and ultimate productions of wells vary with the initial field pressure at the time production is begun.[2] The expansive force is not entirely a matter of pressure.

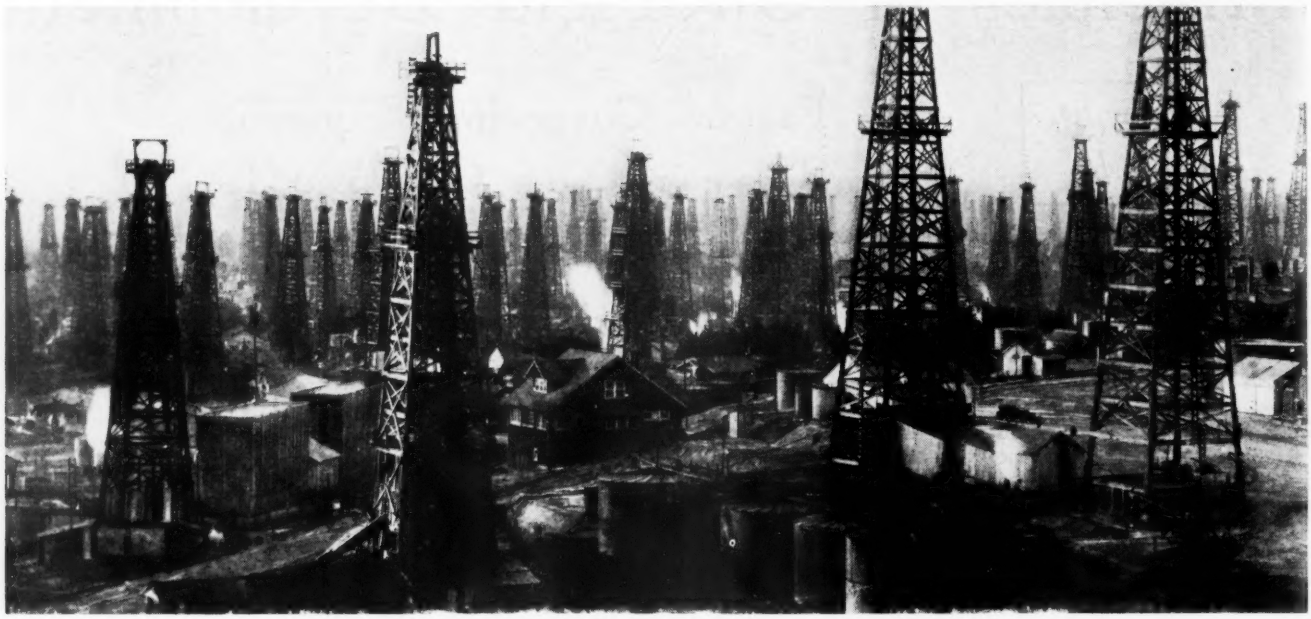
Total energy is the true criterion, and this is a function of both pressure and volume.[3] It is probably often the case however, that the gas available for expulsion is largely in solution in the oil; and since solubility of the gas in the oil is proportional to the pressure, it follows that in such cases, the volume of gas available for expulsion is proportional to the pressure, and hence the total energy available will also be proportional to the pressure. Such an assumption, however, is justifiable only during the early period of production in a new field, for after production has proceeded for a time, much free gas will exist in the drained spaces of the reservoir rock in association with the oil, and the volume of gas and the total gas energy will therefore no longer be proportional to the pressure.

In some fields it appears that the hydrostatic pressure of edge-water occupying the pore spaces of the lower horizons of the formation containing the oil, is sufficient to exert an important expulsive effect on the oil. This pressure is roughly proportional to the depth below the water-table of the locality. Edge-water pressure is a force that is probably operative to some extent in the great majority of oil fields, in some instances—generally where the reservoir rock is very permeable—it ap-

1. For a detailed discussion of the action of the expulsive forces, see an article by the Author, published in NATIONAL PETROLEUM NEWS, issue of Jan. 26, 1927, p.71.

2. See NATIONAL PETROLEUM NEWS, issue of October 2, 1929, p.65.

3. See a paper by the Author, printed in the Oct. 19, 1927 issue of NATIONAL PETROLEUM NEWS, p.73.



A portion of the "town-lot" section of the Long Beach field, California

pears to be the dominating expulsive force.

Gravitational force tends to concentrate all fluids in the lower portions of the strata to which they have access. While the force of gravity is primarily in a vertical direction, it nevertheless has a component in the direction of the bedding planes of the reservoir rock, causing fluids to slowly flow through the productive formations to the well outlets. Though always operative to some extent, it is probably a force of much lower magnitude than gas pressure throughout the greater part of the productive life of most oil fields. After gas pressure has declined to low levels however, gravitational force may play a more important role.

Still another expulsive force that may be operative is that due to compaction of the reservoir sand. It is conceivable that a relatively unconsolidated sand-stone, originally containing oil and gas under high pressure, may yield somewhat to the pressure of superimposed sediments when the gas pressure is relieved in the process of oil production. This readjustment is effected at the expense of the pore space of the reservoir rock, a process which reduces the space available for storage of gas and results in partial expulsion of the rock fluids.

The expulsive force brought to bear in causing flow of oil into wells, is probably a composite of all of the forces suggested above, with gas pressure dominant in most cases. The greater the pressure exerted by these combined forces, the greater will be the drainage radius of the wells and the greater the over-all energy from these sources that can be brought to bear during the productive life of an oil field. A higher percentage recovery may be secured in fields where the reserve of expulsive energy from all sources is high; and for a given recovery, wells may be more widely spaced in fields where the reserve of expulsive energy is high than in areas where it is low.

The magnitude of the expulsive energy, as a rule, increases with depth below the surface. As has been suggested above, the effective edge-water pressure increases with depth below the water-table of the locality, and the latter is roughly conformable with the earth's surface. Depth determines also, the maximum gas pressure that may develop, and since the solubility of gas in oil increases in straight-line relationship with pressure, the energy available from this source increases with depth.

When this gas pressure is relieved in the process of oil production, compaction of the reservoir sand would in all probability be greater as depth increases, due to the greater weight of the superimposed sediments. Since three of the four expulsive forces increase in magnitude with depth—among them, the most important one: that of gas pressure—(it follows that in so far as these factors are concerned, wells may be more widely spaced for a given recovery in exploiting deep-seated deposits than in shallow deposits; or, for a given spacing of wells, percentage recovery will be higher from deep deposits than from shallow. As will be shown later in this discussion, certain other factors operate in the reverse direction in so far as depth is concerned.

Magnitude of the Retentive Forces

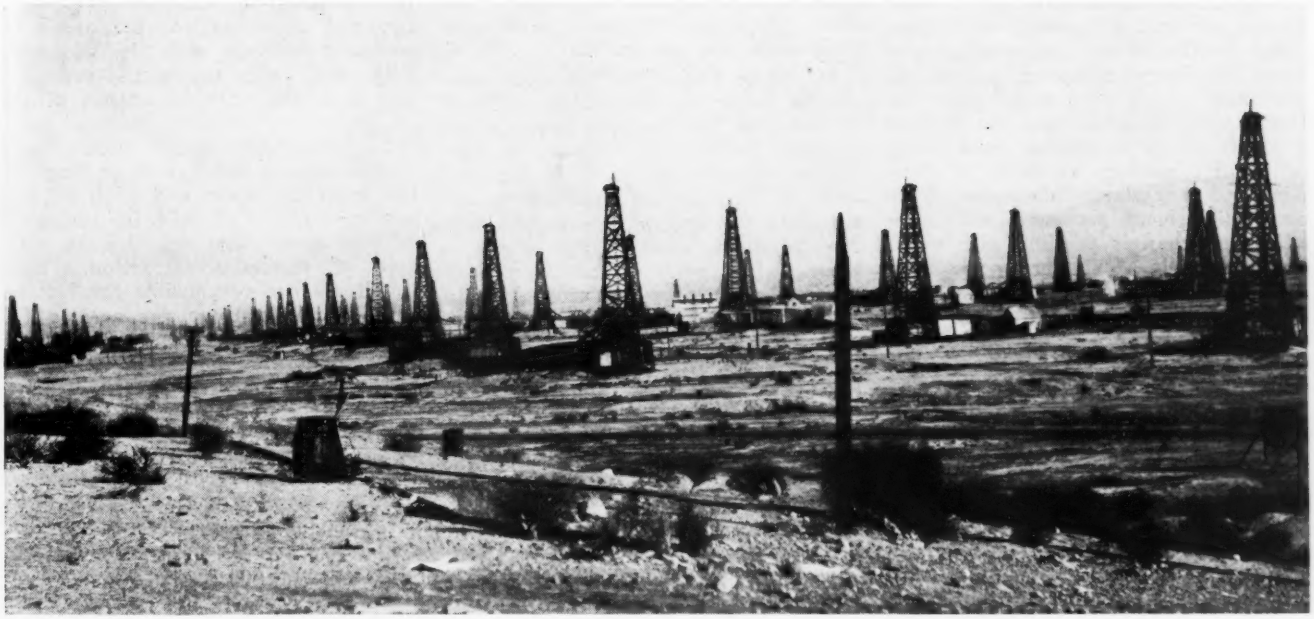
The net effect of the expulsive energy available from all sources in moving oil from the reservoir rock into the wells, will be limited by the resistance offered by the reservoir rock to passage of oil and gas through it. The greater the rock resistance, the greater will be the energy consumed in moving a unit mass of oil to the well outlets. Consequently with sand conditions capable of developing high sand resistance, the available energy will be effective in moving a smaller quantity of oil. In order to offset this handicap, wells must be more closely spaced so that the oil need be moved over a shorter distance.

The permeability of the reservoir rock and the resistance that it offers to flow of fluids through it, is a function of several variables. The size and shape of the sand grains determine the size and form of the pore spaces through which the fluids flow, and influence to an important degree the resistance offered. The porosity of the sand is also important in that it is a measure of the flow cross-section through which flow occurs.

Secondary cementation undoubtedly plays an important role in reducing the original porosity. Flow resistance varies inversely as the size of the sand grains and inversely as the 3.3-power of the porosity, when expressed as a percentage.[4] The texture or nature of the mineral grain surfaces presented to the oil by the reservoir sand, is also a resistance factor: angular, rough-surfaced mineral fragments resulting in greater flow resistance than well-rounded, smooth-surfaced mineral grains. No quantita-

4. For a more detailed discussion of the action of the retentive forces, see an article by the Author in NATIONAL PETROLEUM NEWS, issue of February 9, 1927, p.67.

—Or Is Either?



Uniform spacing along a property line in the Sunset field, California

tive studies of this resistance factor have been made.

The viscosity of the oil and that of the gas, and the resistance offered by gas bubbles to displacement as they move from pore to pore of the reservoir sand, are also important resistance factors, as is that of the adhesive molecular attraction between the moving oil and the stationary mineral grain surfaces over which the oil must pass. The viscosity of the oil is a measure of the internal resistance offered by the oil itself to motion of its component parts upon each other. Flow resistance of oil moving through sand, is found to vary directly as the viscosity of the oil.

The magnitude of bubble resistance, is as yet uncertain. No doubt it plays an important role in the vicinity of the walls of the wells, where gas expansion and movement of fluids is comparatively rapid. The problem of bubble resistance is not merely that of distortion of bubbles in moving from pore to pore, which has been referred to as the "Jamin effect." but there is in addition, the phenomenon of a viscous mass of oil containing very finely divided gas bubbles in suspension, the small gas bubbles probably being formed by gas released from solution in the oil.

The resistance to flow offered by such mixtures of gas and oil, is far greater than that of equal volumes of oil and gas when less intimately associated, the mixture at times apparently assuming the properties of a semi-plastic grease or wax. This condition, has been noted in experimental laboratory tests and has been found to offer a serious obstacle to drainage of oil from sand under certain circumstances.[5] It seems reasonable to expect that similar mixtures may be formed in field drainage of oil sands.

No quantitative studies have as yet been made of the adhesive molecular attraction existing between the oil and the mineral surface of the reservoir rock, nor of its influence on the flow of oil along such surfaces. It seems probable that each sand grain is permanently surrounded by a stationary film of oil as a result of this interfacial attraction, and that other oil films, in moving over these stationary films, must slide along each other. This movement would be resisted by the oil viscosity, and possibly also, to an undetermined extent, by attraction exerted on the moving oil by the nearby mineral surfaces, through the stationary film.

From the above discussion, it will be appreciated that research must be directed toward the measurement of several important physical variables before we will be in a position to predict the resistance that will be offered to movement of oil and gas through a reservoir sand under a given set of conditions. The problem is complicated by the fact that the resistance offered also varies with the rate of flow, and the rate of flow diminishes with the expulsive pressure available and with the distance from the wall of the well.

In flowing through the reservoir sand toward the well outlets, oil and gas necessarily approach the wells along converging channels. The cross-section available for movement of fluids through a reservoir rock of constant thickness, varies directly as the distance from the axis of the well. That is, at the wall of a 6-inch well, the fluids must pass through a cylindrical cross-section only one-twentieth of that through which they flow ten feet away from the axis of the well; and 50 feet from the axis of the well, the flow cross-section is 100 times that at the wall of the well.

Assuming that the same volume of fluid passes through all three of these cylindrical cross-sections, the rate of flow of the fluids at the wall of the 6-inch well would be 20 times that at the cylindrical cross-section ten feet from the axis, and 100 times that at the 50-foot cross-section. Actually, due to gas expansion, a much greater volume of fluid passes the 6-inch wall of the well than passes either the 10-foot or the 50-foot section, growth in volume of the gas as the fluids approach the well, still further accentuating the differences in rates of flow.

It is evident that as the oil and gas approach the walls of the drainage wells, in their flow through the reservoir rock, the rate of flow is continually increasing. Experimental data have shown that the pressure loss or sand resistance to flow, varies directly as the rate of flow: hence it follows that greater pressure losses are incurred in the vicinity of the wells than at points remote from the wells. It can be demonstrated in fact, that half of the pressure loss incurred in moving oil over a drainage radius of 300 feet through an oil sand to a well outlet, is incurred

5. Tickell, F. G., "Capillary Phenomena as Related to Oil Production," Transactions, A.I.M.&M.E., Petroleum Development and Technology in 1928-29, pp.343-361.

within ten feet of the wall of the well.[6]

An understanding of the principles characterizing radial drainage to well outlets, as outlined above, will make clear to the reader the reason why wells of large diameter permit of drainage of oil over a greater distance with a given maximum field pressure, than is possible with wells of small diameter; or, with a given spacing, why large diameter wells accomplish more thorough extraction of the oil than is possible with small diameter wells. This theory has been amply proven by experimental evidence[7] and is corroborated by field data in cases where cavities have been formed about wells within the reservoir sand, either as a result of natural caving, or through the use of explosives.

ENLARGEMENT of a well to partially remove the zone of restriction immediately about it, as is accomplished when cavities are formed about wells within the productive sand, and the realization of a smaller average rate of flow of the fluids during their passage through the reservoir sand, means lower energy consumption per unit of oil produced in overcoming sand resistance. Large diameter wells are therefore more efficient producers than small diameter wells, and may be more widely spaced for the same drainage effect.

Influence of Porosity, Thickness and Saturation of the Productive Sand on Well Spacing

The quantity of oil that may be present in a productive area is dependent upon the space available within the reservoir rock for oil storage and the percentage of available storage space that is actually occupied by oil. The storage capacity is dependent upon the thickness of the reservoir sand and its percentage porosity, the possible maximum oil content increasing directly with increase in these variables. Not all pore space however, is necessarily filled with oil. Gas or water may also be present, occupying part of the available pore space. The oil saturation, expressed as a percentage of the total pore space of the reservoir rock, is a measure of the actual oil content.

Thick or highly porous or well saturated reservoir rocks, containing more oil than thin productive strata of low porosity and saturation, develop higher production rates and greater per-acre ultimate yields, and therefore justify closer spacing of wells. All wells should penetrate the full thickness of the productive sand. If for any reason, it is impractical to secure full penetration, the wells will be less productive and recovery less efficient. Wells must be more closely spaced to secure the same percentage recovery as is possible with full penetration.

In many fields, two or more producing zones are found at different depths. In planning the development program for such a condition, we may drill a separate set of wells for each zone if intensive exploitation is desirable; or, we may exhaust each zone in turn, using a single set of wells and deepening them from zone to zone as production proceeds. In the former case, the development program would be planned as though each zone were really a different field. In the latter case, the aggregate thickness of all zones would be the basis for determining the economic spacing, making proper allowance for deferred realization on oil from the deeper zones.

Volume of Recoverable Oil as Influenced by Capillarity and Adhesion

Only a comparatively small part of the oil actually present in an oil reservoir-rock will be recoverable by ordinary production methods. This is partly because sufficient energy has not been provided by nature to overcome sand resistance in moving all of the drainable oil to the wells, and partly because a portion of it is not drainable by any of the processes that are brought to bear upon it in nature.

This latter component is securely held in the reservoir rock by capillarity and by the forces of adhesion and cohesion. The volume of recoverable oil will have an important influence on the economic spacing of wells, and some estimate must be made of the volume of recoverable oil in comparison with that which will be inevitably retained.

CAPILLARITY is an expression of surface tension of the oil, which results in a part of the pore space of the reservoir rock remaining saturated with oil after all free-draining oil has been produced. The magnitude of the capillary force developed, and the volume of oil retained, increases as the size of the pore spaces of the reservoir rock diminishes.[8]

The zone of capillary retention thus formed, often several inches or a foot or more in thickness, occupies the bottom of the oil-producing stratum; and if one or more impervious "partings" occur along bedding planes within the oil sand, a separate capillary zone will be formed above each.

Neither gas expansion nor gravitational force is capable of reducing to any extent the volume of oil retained by capillarity, though the incursion of edge water may result in its displacement under favorable conditions. The percentage of total original oil content of the reservoir rock retained as a result of capillarity, and therefore not producible by ordinary recovery methods, will vary with the sand conditions presented and with the physical nature of the oil.

High porosity, small pore spaces and numerous impervious partings in the reservoir rock, and high surface tension in the oil will be indicative of high percentage retention as a result of capillary attraction. Such conditions are responsible for low recoveries per well or per acre, which will have an important influence in determining the number of wells that can be profitably drilled in a given acreage.

A LARGE part of the original oil content of every oil sand is unrecoverable by normal production methods, because of the force of adhesion which results in every sand grain in the reservoir rock being left completely surrounded by a film of oil. Though these films may be thin, the enormous surfaces presented to the oil by the sand, result in important percentages of oil being retained. Each cubic foot of reservoir sand presents a surface ranging from 1500 to 17,000 square feet, the area increasing as the size of grain diminishes.

Computations indicate that a sand of average texture, 30 feet thick, may present a surface of as much as 600 square miles to the oil within a drainage radius of 300 feet about a producing well. All of this surface must remain wet with oil after drainage by ordinary processes is complete.

No amount of reserve gas energy or gravitational force may remove oil so retained. Edge-water flooding may however, conceivably remove a part of the adhesive oil. The cohesive force existing between molecules of the oil itself, will have much to do in determining the thickness of the retained films.

Consideration of the phenomena of adhesive retention will indicate that the finer grained sands presenting larger surfaces to the oil, and the more viscous oils, leaving thicker films, will result in retention of a larger percentage of the original oil content. Wells drilled in such sands will be relatively small producers and their ultimate recoveries will be less than in comparatively coarse sands with light mobile oils. Consideration must be given to these matters in determining the number of wells that a tract of given size can support.

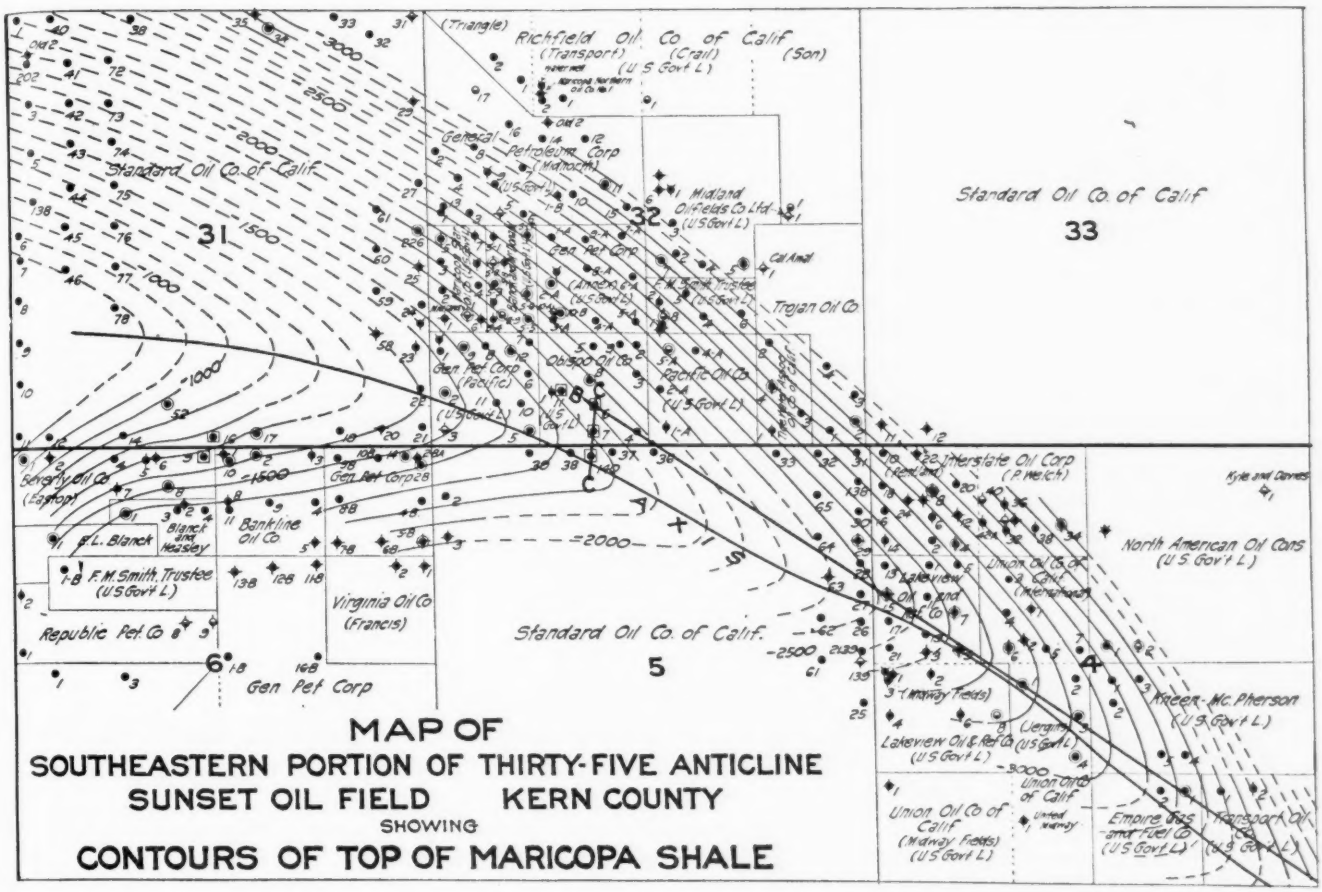
Influence of Structural Position on Well Spacing

Practically all oil deposits occur within some form of anticlinal structure and the location of a property with respect to the structure will determine to some extent, the eco-

6. Uren, L. C., "Increasing Production of Petroleum by Increasing Diameter of wells," Transactions, A.I.M.&M.E., Vol. LXXI (1925), pp.1276-1300.

7. Uren, L. C., Davis, F. F. and Jarvis, W. L., "Advantages of Large Diameter Wells in Exploitation of Oil Fields," Bull., A. P. I., Vol. X, No. 2, pp.94-105; Jan. 3, 1929.

8. Uren, L. C., and El-Difrawi, A. H., "Capillary Retention of Petroleum in Unconsolidated Sands," Transactions, A.I.M.&M.E., Petroleum Development and Technology in 1926, pp.70-91.



Map of a portion of a California San Joaquin Valley field, illustrating characteristic irregularity of well spacing and presumably demonstrating variation in conceptions of different operators of economic spacing of wells. (Map by H. A. Godde and E. H. Musser in Summary of Operations, California Oil Fields)

nomic spacing of wells. Wells drilled near the structural crest receive a greater share of the available gas energy than wells at down-dip locations.

The percentage recovery near the crest of the structure is probably therefore higher and, for a given percentage recovery, wells may be spaced further apart. On tracts well down the flanks of the structure, in the vicinity of the edge-water lines, relatively small volumes of gas are produced and the wells must be more closely spaced for equivalent per-acre recoveries.

Steep-dipping deposits contain more oil sand for a given thickness, on the per-acre basis, than relatively flat deposits. Consequently, wells may be more closely spaced on steep-dipping flanks, particularly in the direction of the dip: that is, steeply-inclined formations will support a greater number of wells. Gravitational drainage effects, on the other hand, are more pronounced in steep-dipping deposits, and in so far as this type of drainage is effective, wells may be more widely spaced on such structures for equivalent recoveries. From both standpoints, it will be observed, steep-dipping deposits are favorable, permitting of high per-acre recoveries and offering efficient drainage conditions.

Movement of gas is preferably up the dip of the formation; hence, in so far as expulsion by gas is concerned, oil migration is also accomplished with greatest facility in that direction. From this standpoint, wells should be more closely spaced in the direction of the strike of the formation than in the direction of the dip. Theoretically, a screen of closely-spaced wells disposed across the direction of flow, would intercept fluids migrating up the dip of the formation in this way, while in the direction of the dip, the wells could be more widely spaced.[9]

If there is surplus gas associated with the oil, beyond what is soluble in the oil at the prevailing pressure, this gas will probably be found concentrated at or near the structural crest. In so far as oil yield is concerned, this concentration of gas at the crest of the structure tends to restrict oil production, particularly during the early years of exploitation of the field, when the crest wells may produce mostly gas. Later, as trapped gas is released, the crest wells may begin to get their share of oil production, though by this time, drainage on surrounding acreage and decrease in the field pressure, may have progressed so far that the potential yield of the crest wells is seriously diminished.

9. Brewster, F. M., "A Discussion of Some of the Factors Affecting Well Spacing," Transactions, A.I.M.&M.E., Petroleum Development and Technology in 1925, pp.37-46.

Economic Factors Covering Well Spacing

Thus far we have given consideration only to the physical factors influencing the spacing of wells. Economic factors are equally important. The value of an oil property is limited by the discounted or present-day value of future profits derived from the sale of its product. Profit is the difference between income from the sale of product and the cost of production. Income is determined by multiplying the volume of production by the selling price per unit of volume.

The cost of production is made up of several elements, including the cost of acreage, the cost of development, the cost of plant and physical equipment, and the cost of operation. All of these are important factors in determining the economic spacing of wells. The oil recovery obtained will also be dependent upon other economic factors, such as the efficiency of operating the wells and the competitive conditions attending development and production.

Profit is the primary consideration in oil recovery operations, and in determining this, the cost of develop-

New Operating Methods

An average of two articles per issue of National Petroleum News, have discussed new operating methods and solutions to problems facing operators in the oil fields.

What operators are doing to cut costs, new methods and ingenious devices for more efficient work, and other features, are included.

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ment and production must be balanced against the value of the oil produced. Up to a certain limit, increasing the number of wells on a tract of land, will increase the ultimate per-acre production, but in so doing, the production per well is diminished. Development and operating costs increase in proportion to the number of wells.

The problem usually presented in determining the economic interval between wells, is to estimate the spacing at which a maximum over-all profit is realized. For any given set of conditions there will be a certain number of wells which, if drilled, will result in a maximum profit. Less than this number will result in the production of a smaller quantity of oil, though development and over-all operating costs will be low.

More than the economic number may result in the production of more oil, though at increased unit cost, because of the greater development and operating cost. It will be seen that the selling price of oil, development and operating costs, the efficiency realized in extraction of the oil and other factors entering into unit production costs, are factors of paramount importance in determining what spacing shall be adopted under a given set of conditions.

Development Costs

The cost of drilling and equipping oil wells increases rapidly with depth, and the cost per foot varies with the character of the formation to be penetrated. In some very shallow fields, where the formations do not cave and very little casing is required—as in some of the fields of the Appalachian region, for example—individual wells may cost less than $1000. Often such wells are drilled with portable rigs that can be quickly moved about from location to location, the depreciation of the drilling equipment being spread over many wells.

In deep territory, on the other hand—some of the areas now being exploited in California and Oklahoma, for example—where wells must be drilled to depths of six or seven thousand feet or more, individual wells may cost as much as $250,000. Obviously, such high expenditure in drilling cost is justified only where per-acre recoveries are high; and for a given quality of recoverable oil per acre, fewer wells can be drilled in deep territory than in shallow. The table reproduced on next page from data recently published by the American Petroleum Institute, shows how the cost of average wells in different fields varies:

Development costs vary not only with depth, but also with the lithologic conditions presented. If overlying water sands, high-pressure gas sands, or caving formations necessitate the use of several strings of heavy, large diameter casing; or if the formations to be penetrated are

abnormally resistant, occasioning slow progress in drilling, costs will be materially higher than under more favorable conditions. Where lithologic or structural conditions are unfavorable, because of the higher cost of drilling, wells must be more widely spaced.

Development costs have also varied within different time periods, and doubtless will continue to do so in future. Pre-war unit drilling costs were lower than post-war costs; and during the post-war period, costs have varied within rather wide limits. In periods of low drilling cost, wells may be more closely spaced than would be economic in periods of high cost.

Accessibility plays an important part in determining drilling costs. In fields remote from sources of supply of necessary materials, or in localities where, because of unfavorable climatic conditions, it is difficult to maintain a stable working community, development costs will be materially greater than in the readily accessible, well-organized oil fields.

Pioneer work in "wild-cat" territory is likely to be expensive because of the cost of building roads and providing power and other necessary facilities that are matters of less concern in the fully developed and partially developed fields. In regions where transportation, power and labor are costly, wells must be more widely spaced.

Operating Costs

Unit production cost will include a proportional part of development expense, as well as the cost of subsequent operation of wells and related indirect charges. The cost of operating a property will increase with the number of wells to be operated and with their depth, and will vary with the sand conditions which determine to an important degree the cost of necessary cleaning and repair work as well as the net time available for oil production. As in the case of development, the cost of labor, power and necessary materials will vary in different localities, and will determine to an important degree the cost of operating the wells.

The rate of production of the wells will have an important influence on unit production costs. Oil derived from thin, "tight" sands which develop small daily yields, will be expensive production from the unit cost standpoint. The over-all cost of exhausting the oil from a property will also increase as the time necessary for exhaustion of the oil increases.

Production costs range from a few cents up to several dollars per barrel, and individual well operating costs from as little as ten cents per day to upwards of $100, depending upon the conditions presented, the method of well operation employed and the volume of production.

Any condition which results in increase in the cost of operation of oil properties, or in the unit cost of producing oil, will tend to increase the economic spacing of wells. Operations are less profitable, hence fewer wells must be drilled in order that development and operating costs will be lower and the daily recoveries per well larger.

The method of well operation adopted will influence production costs to an important extent. Daily well operation expense and unit production costs are lower for flowing wells than for wells that must be mechanically pumped.

Gas-lift operations will generally result in a greater well-per-day expense than in plunger pumping; but due to the high rate of production possible by this method, a lower unit production cost results. Repressuring of flooding operations will necessarily be more costly than primary operations.

In planning the development program, operators should contemplate the whole life period of operation of the property. That is, both the method of primary and secondary exploitation should be considered, and if a greater number of wells is likely to be necessary in the later exploitation of the property by repressuring, gas-driving or water-flooding, beyond what would be necessary in primary exploitation, it may be found economic to drill these additional wells early and secure the larger primary production that would result from so doing.

Influence of Interest-Earning-Capacity of Capital on Well Spacing

The rate of interest demanded by capital enters into the well-spacing problem in two ways: (1) it operates to reduce the apparent value of future income in the computation of present-day values, and (2) it is a measure of what the investor considers a fair return in the way of profit on his capital investment.

Money invested in the oil producing industry should command a somewhat higher rate of interest than is appropriate for the ordinary manufacturing enterprise, because of the greater element of risk involved. Oil-producing properties are wasting assets which must return their capital cost before any profit can be said to result. Each oil company dividend is a return of both principal and interest.

At rates of 10 or 12 per cent, which are perhaps not too high for an oil-producing enterprise when the risks involved are taken into account, the present-value of future expected profits diminishes rapidly. A dollar due five years hence, discounted at 10 per cent is worth only 62 cents; if it is received ten years hence, it is worth only 38.6 cents; and if discounted over a twenty-year period, its present-value is only 14.9 cents.

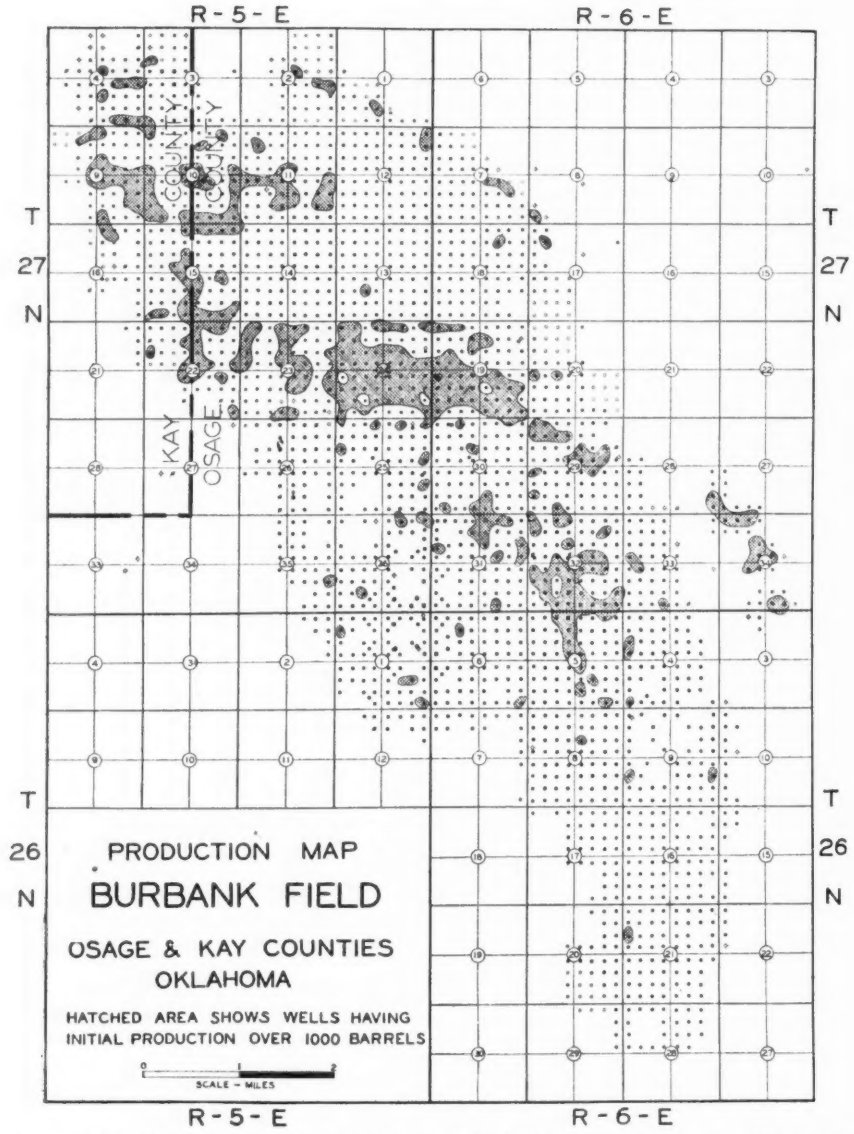
Because of the loss occasioned through delay in realization on value of oil in the ground, every effort must be made to produce and market the maximum quantity of oil in the shortest possible time. This cost element, which we may call the "interest cost of deferred production," therefore favors closer spacing of wells, but after a certain point it is off-set by the increased interest charges on the capital investment involved in drilling and operating the greater number of wells.

There is always a certain number of wells for any given set of conditions, for which the algebraic sum

Estimated Drilling Costs for Typical Wells in Various American Fields in 1928*

Field	Total Cost per well	Depth	Cost per foot
Oklahoma			
Earlsboro Pool, Seminole District	$60,700	4,350	$13.95
South Little River, Seminole District	56,829	4,198	13.54
Seabright Pool, Seminole District	70,038	4,355	16.08
Bowlegs Pool, Seminole District	72,168	4,323	16.69
Seminole Pool, Seminole District	62,804	4,115	15.26
Vernon Pool	21,074	3,356	6.28
Marlow Pool	12,421	1,791	6.93
Burbank Pool	27,417	2,813	9.75
St. Louis Pool	55,208	4,199	13.15
Kansas			
Wichita Heights, Sedgwick Co.	52,873	3,429	15.42
Texas			
Winkler County, West Texas	40,984	2,735	14.98
Gray County, Panhandle District	30,107	2,670	11.28
California			
Kern River West Front, Kern Co.	34,790	2,200	15.81
Inglewood, Los Angeles Co.	47,611	2,300	20.70
Buena Vista Hills, Kern Co.	54,094	3,000	18.03
Buena Vista Hills, North Flank, Kern Co.	57,329	4,600	12.46
Rincon Field, Ventura Co.	76,760	3,500	21.93
Huntington Beach, Ocean Front, Orange Co.	86,137	4,300	20.03
Huntington Beach, Bolsa Zone, Orange Co.	75,925	3,800	19.98
Santa Fe Springs, Los Angeles Co. Buckbee Zone	120,924	5,800	20.85
Kettleman Hills, Kings Co.	197,737	7,200	27.46

*From "Petroleum Facts and Figures," Second Edition, Am. Pet. Institute, 1929.



Illustrating 10-*acre per well spacing in a field characterized by a wide variation in porosity of the reservoir sand. If* 660 *feet is a proper interval between wells in the more porous areas, can the same spacing be correct in the less porous areas? (Map by J. M. Sands in Bulletin A.A.P.G.)*

of the different cost elements will be a minimum. Interest losses on deferred production must, of course, be balanced against any possible loss in selling price of the oil, which might result through intensive exploitation with resultant production of a large volume of oil within a short period of time—perhaps far in excess of the market needs.

Influence of Selling Price of Petroleum on Spacing of Wells

The future revenue of an oil property must depend largely upon the selling price which the product will command at the time it is sold. This, of course, cannot be precisely foretold or even approximated on any scientific basis. Future selling price may however, be estimated from a study of the trend of past and present markets and from a consideration of the probable demand for petroleum and petroleum products and of the possible extent of competition with substitute commodities.

The price of petroleum is fundamentally concerned with the available supply. A study of oil reserves, both above and below ground, of the trend of production in the producing areas —that is, whether it is increasing or decreasing—and of the probability of new discoveries or of extensions of old fields, will lead one to some conclusions concerning the available supply for the future.

Price is measured by the algebraic sum of the supply and demand factors. If supply is increasing in a greater ratio than demand, prices will be depressed; and if the price is to increase, it must be the result of either increase in demand relative to supply, or decrease in supply relative to demand. These are self-evident economic truths that form the basis of future price estimates.[10]

Most present-day valuations of oil properties are based upon the assumption that future oil prices will be at a somewhat higher level than has prevailed in recent years. A study of the available under-ground reserves and of the rapidly expanding markets for petroleum products, leads inevitably to this conclusion. Waning production coupled with increased demand, should increase petroleum prices progressively until limited by competition with substitute products.

Obviously, no method of estimation can enable one to predict minor crests and troughs in the future price curve, or temporary depressions or inflations in market conditions, but a close study of the economic factors involved will permit of predicting the general price trend.

Increase in oil values will justify closer spacing of wells. If oil were worth five dollars per barrel, it would be profitable to drill and operate wells for a much smaller daily production than would be possible for dollar oil. This consideration prescribes a higher percentage of extraction and closer spacing of wells as oil increases in price.

A proper interval between wells today may be far too great ten years hence, and we may then find it profitable to drill intermediate wells between the old locations for small productions obtained by more expensive methods, from sands not completely drained by the earlier wells.

Summary

The present article has for its purpose a review of the various factors, both physical and economic, that must be taken into consideration by the oil producer in determining the most profitable spacing of wells on his property. It has been shown that a great many different variables have a bearing on the well-spacing problem; so many in fact, that it seems a hopeless task to try to formulate them on any mathematical basis.

Indeed, so little is known of the influence of some of the variables involved, that we are not yet in a position to attempt the development of any general well-spacing formula. Nevertheless, this has been attempted by a number of engineers and physicists who have studied the problem in its various aspects.

Some of these well-spacing formulas are to be reviewed in the next article of this series. A complete solution of the well-spacing problem would permit of formulation of the many variables involved, though the resulting formula would necessarily be complex; but before this may be done, a great deal of research on several of the influencing factors must be conducted. It is to be hoped that the oil industry will recognize the importance of a better understanding of the factors underlying well-spacing, and take the necessary steps to determine the quantitative influence of the at-present unknown factors.

10. Uren, L. C., "The Elements of the Oil-Well-Spacing Problem," Bulletin, American Association of Petroleum Geologists, Vol. IX (1925), pp.193-216.

Moore-Cooper Area of Panhandle Has Record for Consistency

By William F. Lowe
N. P. N. STAFF WRITER

AMARILLO, Texas

THE Moore-Cooper area of northeastern Carson county, and southwestern Hutchinson county, is more than justifying the play it has been given in the last six months. Production is not only holding up but some of the latest wells are larger than expected. Known to be one of the most consistent high gravity oil producing territories in the Panhandle of Texas, with wells having initials up to 200 barrels, it was not thought that anything in excess of that figure would be found.

It has been necessary to revise many of the early estimates of the pool as some of the new wells have had first 24 hour gauges above 400 barrels. Aside from these unexpected large wells the real interest in the area is rather in the flat production curves, and the character of the pay horizon.

The major portion of the production of the Panhandle has been found either in lime or in granite wash. In the case of the former the wells have been erratic with offsets varying as much as 1000 barrels in initial gauges. This is partly true of the granite wash wells except that offsets often fail to produce at all. Water incursion has caused trouble in both early in their productive lives and production decline for leases with these pays, is comparatively rapid.

The Moore-Cooper pool has not yet had a single failure in its dolomite pay and declines have been decidedly slow. In fact, there are at least five cases where wells have actually shown an increase in daily average production, one year after completion. None of these is a large well, only one being over 100 barrels, but the daily average output per well is 80 barrels of 43 gravity A.P.I., sweet oil.

A realization of the above facts and price of $1.55 commanded by the crude, are the probable causes for the long delayed activity in this pool. Operators have been so busy shooting at the large initial producers elsewhere, that the small wells of this edge area have failed, until recently, to attract more than passing attention. A big flush has been considered essential in the Panhandle to make a lease pay out. Of course that is the ideal condition in any field, but here, considering the nature of the pay horizons, it is almost a necessity.

Only last spring acreage could be bought in the Moore-Cooper area for $250 per acre and there were few willing to buy at that figure. Drilling 3100 foot wells for a 200 barrel initial was not considered good form in that part of Texas. Now, however, after a summer of scattered drilling and the completion of eleven wells in the last two months, the narrow producing strip north of the old Roxana pool is coming in for some serious consideration.

Geologically it is not so different from many other spots along the trend of production. There are several places in Carson and Gray counties where the same subsurface conditions exist but they have been taken more or less for granted. For some reason, the development of this pool has given rise to the idea that it has something entirely new, or at least decidedly different, in underground conditions.

This belief may be due to its unexpected performance, to its extent, or to the fact that its outline is a little clearer than duplications of it in other localities. Operators seem rather surprised at the results they are obtaining, considering the fact that the area has been discounted for nearly two years, and several are deep in the throes of regret at not having seen the possibilities long ago.

THE Moore-Cooper pool is a strip of dolomite pay area one mile north of the old Roxana pool in northeastern Carson county. It is only half a mile wide and, up to the present time, is but three miles long. It follows the general northwest-southeast trend of the Panhandle fields as it crosses the line between Carson and Hutchinson counties. On its northeast and southwest sides, within three-quarters of a mile of its producing wells, are several dry holes.

That these dry ones should appear on the north is not surprising, but the exceedingly barren streak between the Roxana pool and the Moore-Cooper is not so good. The accompanying cross-section is an attempt to illustrate the cause of this unproductive territory.

The lower half of the Roxana pool, a portion of that found in section 92 Block 4, I&GN survey, is producing from granite wash. As the wells were drilled farther to the north, the pay horizon became a hard lime or a dolomite. Even these failed to be productive in the north half of section 107.

SAMPLES from the dry holes or gas wells in the upper part of this section, show the pay horizon to be saturated with oil but to be so tight and lacking in porosity as to be unproductive. It is not thought that this non-porous streak represents a tight local lens, but rather it is a very compact limestone bed sloping away from the granite ridge in much the same manner as do the other strata. Its exact width on the surface has not yet been determined though it will probably be close to a mile.

The water level in both pools is very nearly the same, as salt water is encountered close to sea level. Oil pays too, are practically the same, being found between 100 and 150 feet above the water. However, there is no cutting in the wells of the newer area except where the holes have been carried to sea level and then plugged back. Great care is now being taken in drilling the new wells into the pays in order to avoid reaching the water.

Following the general trend of production southeast, to the central portion of the west line of Carson Co., the Skelly Oil Co., pool on the Schafer ranch, corresponds to the Roxana pool both in the character of its pays and in sub-surface structure. What might be called the Moore-Cooper strip, or at least a continuation of that strip of dolomite pay, a mile or so north of the present production, has not yet been tested.

In Gray county, one-half mile north and a mile east of the McConnell pool, which is in section 174, block 3, I&GN survey, the dolomite pay appears closer to the granite wash production than in Carson county. The lime wells of sections 149, 150, 163, and 164 of the same block and survey, bear the same relation to the McConnell pool that those of the Moore-Cooper area do to the Roxana pool. Being closer together, the distinction is not quite as great structurally, but the pays are very similar.

It is thought that the same condition is recognized in the completion of the Dodson-Shell No. 1 Saunders,

40-3-I&GN, half a mile north of the old Gulf-Saunders pool in the same section and block. The section found in this well very closely resembles that of the wells in the Moore-Cooper pool.

On the same line, but to the northwest, toward the Badger pool of Hutchinson county, the geologic section seems to flatten out. The dolomite and granite wash wells are considerably further apart with a consequent widening of the lean area in between. High gravity oil is found in many of the wells but they are not as big, on the average, as those now being drilled along the south line of the county.

Operating wells in the Moore-Cooper pool is very simple compared to the difficulties encountered in the Borger field. There is but a small amount of gas in the pay horizons and paraffin troubles are considerably lessened as a result. The wells are put on the pump as soon as completed for none of them flow, even when drilling in.

Once "on the beam," rod pulling jobs are more often the result of mechanical failure than to paraffin in the tubing. Six weeks to two months between jobs is not at all unusual. In several cases it has not been necessary to clean out the tubing for a period of four months. Such wells are more or less novelties in the Panhandle.

The largest well in the area is the Continental Oil Co.'s No. 1 Block, NE SE 111-4-I&GN, which was completed recently for an initial production of 453 barrels, at a total depth of 3105. The pay was from 3025 to 3050. The Gulf Production Co., brought in its No. 3 Cooper, NW NE SW 5-9-I&GN, last month with a first 24 hour gauge of 447 barrels. The well was bottomed at 3130 with a pay from 3055 to 3090.

These wells are nearly 200 barrels larger initially than most of the other producers in the pool. Given the same slow decline they should prove to be worth double the value of wells of the same size in the Borger district. As an illustration of how slow this decline is, the following table is of interest.

Company	Well	Completed	I. P. average one month	Present daily average
Midwest Exp.	No. 1 Moore	4/4/27	116 Bbls.	35 Bbls.
Texas Co.	No. 1 Moore	11/3/27	53 Bbls.	47 Bbls.
Stubblefield	No. 1 Cooper	11/3/27	58 Bbls.	61 Bbls.
Timms	No. 1 Jordan	1/20/28	64 Bbls.	52 Bbls.
Timms-Dietch	No. 1 Jordan	7/12/28	73 Bbls.	50 Bbls.
Ryan Consol	No. 1 Block	9/18/28	98 Bbls.	84 Bbls.

The present total production of the 32 completed wells in the Moore-Cooper pool, is in excess of 4000 barrels per day, which makes a per well average of a little over 120 barrels. Some of these wells are more than two years old, though they still produce around 50 barrels of pipe line oil every day. In three cases this figure represents 80 per cent of the wells initials.

Art E. Wallace, in charge of production for the Western Gulf Oil Co., at Los Angeles, went to the Pacific Coast originally from Tulsa, seven or eight years ago. He was the first Gulf man to be stationed permanently in that territory

Realizing that the decline curve could not continue indefinitely so near the horizontal position, operators in the area originally had the idea of "five spotting," or even "four spotting" an 80. Spacing wells in this manner would tend to keep individual well production higher and reduce the investment. The theory was a good one but line offsets broke up the party, and it now looks as if the leases would be drilled in accordance with the usual formula, ten acres—one well.

That other pools of this type will be found in the Panhandle, is not only possible but probable. As to where and when, that is another question. The average of a new producing area every six months has not yet been broken and there is no reason to believe that the time has come to change. However, it is a safe bet that the next dolomite area found that bears a resemblance to the Moore-Cooper pool, will not be ignored for so long a time before it is developed.

Coal, Not Oil Shale to Be Gasoline Source

WASHINGTON—Coal rather than oil shale, in the opinion of A. C. Fieldner, chief chemist of the U. S. Bureau of Mines, will be the primary source of gasoline and other liquid motor fuels when the supply of crude petroleum will be depleted "within a few generations." That is what he told a newspaper man who was interested in finding out where the automobile fuel was coming from when the evil day many have been predicting since 1862 should arrive.

The Bergius process, in Fieldner's view, is the most practical for turning coal into gasoline. He called attention to the fact that the Standard of New Jersey controls the Bergius process so far as the United States is concerned. He said he understood that that company, as part of the research work connected with that process, was applying it to the hydrogenation of heavy oils and that the claim was being made that under the Bergius process conversion of heavy oils into gasoline ran practically to 100 per cent, whereas other cracking processes produced only about 40 per cent of gasoline.

The chief chemist, however, pointed out that the experiments with processes for turning coal into crude and then taking gasoline out of the liquefied coal, were probably not being carried on as energetically now as when the idea was that the supply of petroleum would be exhausted in about 1933. Now, on account of new discoveries, the chief chemist said, there was no likelihood of the crude being consumed before 1952 or the year after that.

But, said he, when the prices of gasoline began to rise and a pinch set in, it was likely that gasoline from coal would be produced first only as a by-product and then later, perhaps, as a primary product, from the low grade coals and lignites which yield more readily to hydrogenation than the anthracites and the high priced low volatile so-called smokeless coals.

CHICAGO, Nov. 21.—Earle F. Moore, chief operator and field service man for the Jenkins Petroleum Process Co. died Oct. 9 at Big Spring, Tex., after an emergency operation Oct. 5.

Mr. Moore had worked formerly for 11 years in the Whiting, Ind. refinery of the Standard Oil Co. of Indiana. He was for three years with the Jenkins company. He is survived by a wife and two boys.

One Man Operates New 7000 Barrel Pipe Still Skimming Unit

By Allen S. James
N. P. N. STAFF WRITER

TULSA, Nov. 22.

A REFINING unit capable of skimming 7000 barrels of crude oil daily and making gasoline, naphtha, kerosene, gas oil or distillate, and fuel oil suitable for cracking stock, but which does not have the conventional receiving house and which requires the attention of only one man each shift, was placed in operation recently at the West Tulsa refinery of the Producers & Refiners Corp.

Specifications were furnished by Winkler-Koch Engineering Co., Wichita, Kan., but construction work was done by P. & R. men under the general supervision of John Cutter, superintendent. J. S. Blair was engineer in charge of construction, and the late H. D. Prveto was construction foreman. Charles Brown, plant electrician, installed the electrical work and automatic control system which makes the services of only one operator required at a time.

Except for the absence of a receiving house, the unit from all outward appearances looks like any other typical Winkler-Koch pipe still installation. Placed as it is next to a battery of seven shell stills which it has replaced in the plant's operating program, the unit gives the appearance of unusual neatness and compactness. A close inspection of the system, however, reveals several interesting features which were worked out by the P. & R. men.

The old style cast iron condenser coils were used in place of the newer tubular type. The experience at this particular refinery, it was said, had shown that the tubular condenser does not have the length of life the cast iron ones have, the tubular type in some cases having caused trouble within 60 to 90 days after they were installed.

The cast iron type may not be as efficient, it was said, but with after-coolers installed, and the low cooling water costs, it was felt neither efficiency nor economy would be sacrificed in the long run, since the cast iron condensers would require little if any attention.

After it was decided to use the cast iron condensers with the large condenser boxes, the question of utilizing the space under these boxes was raised. The designers decided to convert that space into a combined control-pump-motor-receiving house.

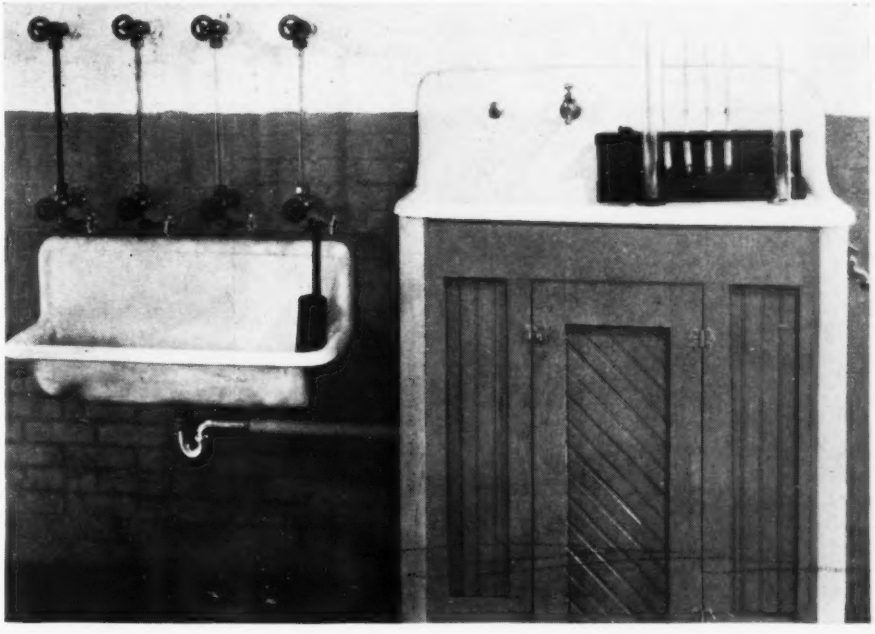
The brick walls form the edge supports for the condenser box, which is approximately 30 by 45 feet. In this room are the electric motors, pumps, steam stand-bys, instrument control board, and the new idea in receiving houses and look boxes. It is in this room the one operator remains during his shift and it is from this room he controls the operation of the entire unit, and tests the "run-down" products for gravity. Rarely does the operator have to leave the room to manipulate any phase of the system. Every control is at his finger tips.

The room is well lighted by windows and overhead lights, and a heating unit is being installed which will keep the room temperature constant to prevent sudden changes in atmospheric conditions outside from affecting the instruments on the control board.

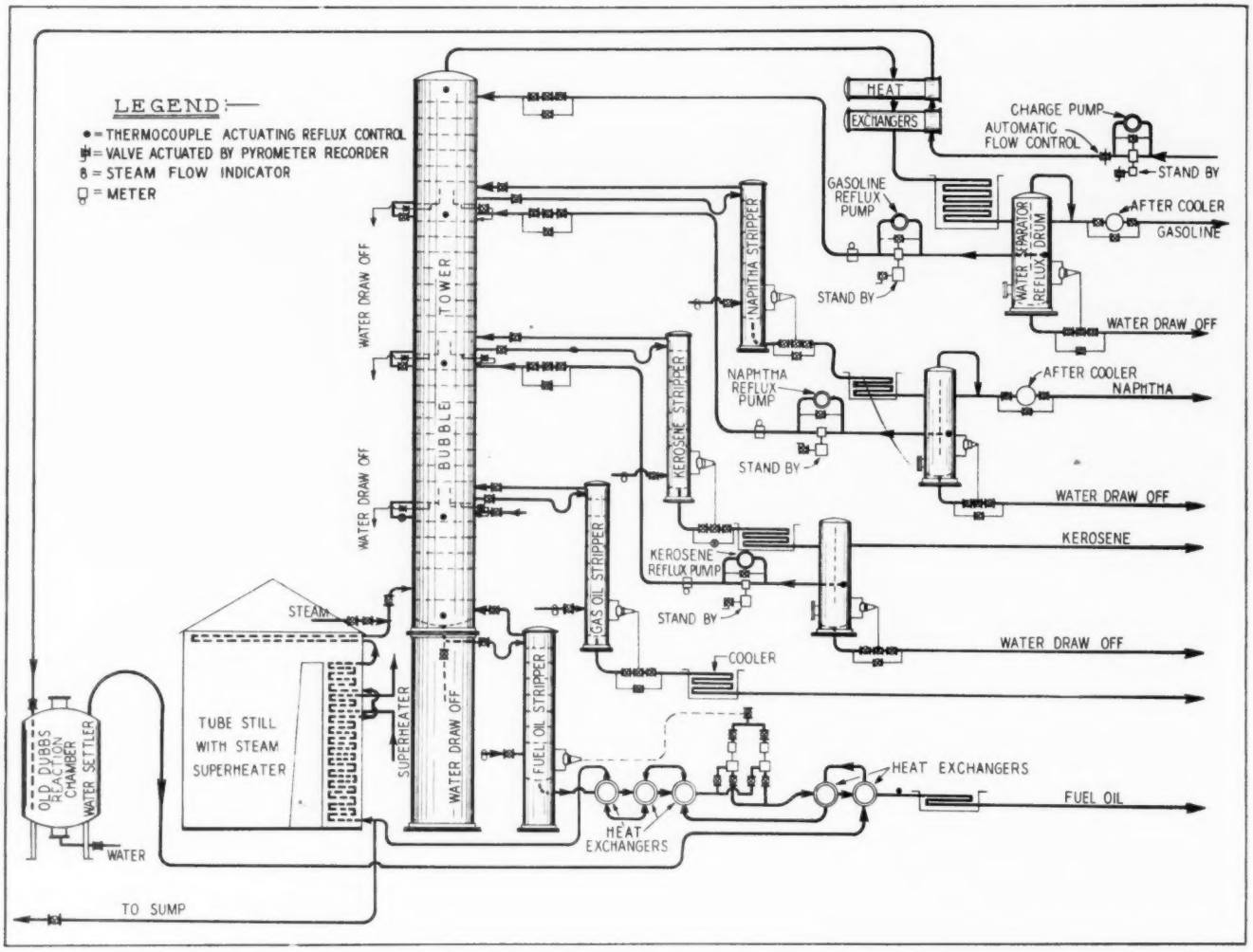
Abolishment of the conventional receiver house, with its long, iron stairway and its large look boxes, was an innovation. An accompanying picture shows what has supplanted the receiving house and look boxes, and the space it occupies in the control room. Here is how the system was installed:

The flow pipes from the gasoline, naphtha, kerosene and distillate streams were tapped with half-inch pipe. These pipes were inserted between the condenser box and the water separator and reflux drum. Half-inch lines were brought down the outside wall of the control room to the required place and then run through the wall to the inside. They were connected by a section of gauge glass as shown in the photograph. Valves at the bottom permit the operator to draw off a sample of the liquid for testing. The small pipes were so placed in the larger ones that a constant stream of liquid flows by gravity through the gauges.

A fire wall was built in one corner of the control room, making a small but separate room just large enough for the electric motors operating the crude charging pump and the reflux pumps. The motors were connected direct to the pumps through stuffing boxes set in the fire wall. These are as air tight as possible. The motors can be operated by switches in the control room proper or if the operator desires, they may be started or



Four gauge glasses on the side of the wall are the look boxes for the new unit. The samples are drawn from the valves at the bottom

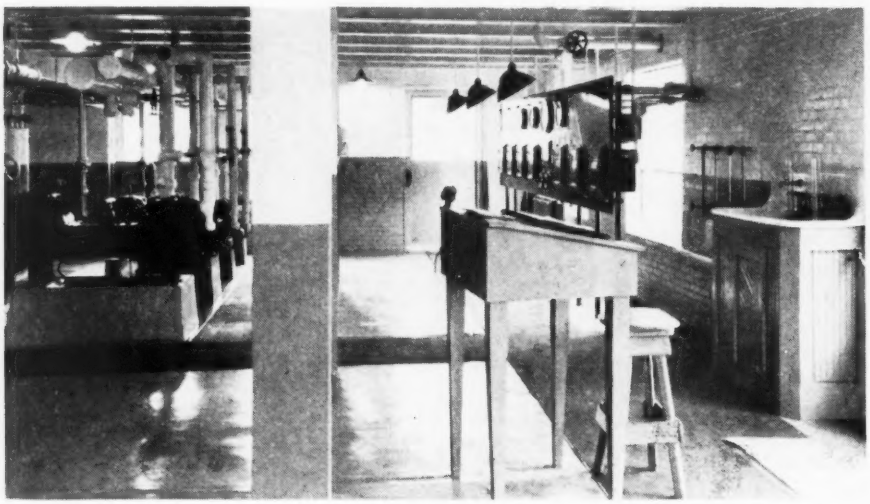


Flow chart of new pipe still unit at Producers & Refiners Corp. refinery at Tulsa

stopped by means of auxiliary switches in the small motor room. Entrance from the control room is gained only by going outside the control room and around to the motor room door.

The fire or explosion hazard in the motor room was minimized by the installation of an exhaust fan. Mr. Brown used a 12 inch fan, placing it near the ceiling, but reversing the fan so that the air would be blown into the room.

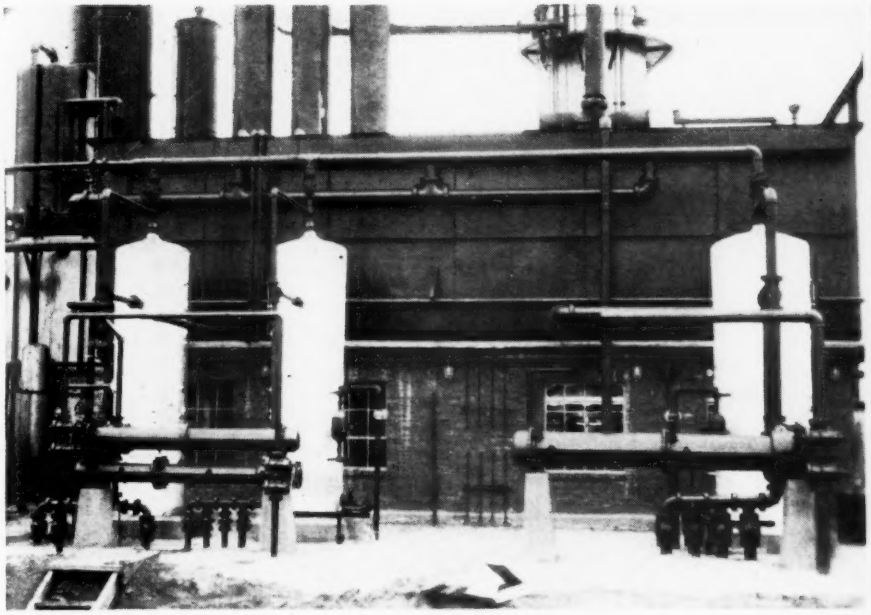
The motor room is small, being only about 6 by 20 feet, and the fan creates enough air pressure within the room to prevent any gases seeping in from the control room. By placing one's hand at the crack of the door outside the motor room a distinct air pressure from inside the room can be felt. With a slight pressure in the room, no gases can enter.



This photograph shows the neat appearance of the control and pump room under the condenser boxes. The electrically operated pumps are not shown in the picture. They are at the left of the steam standbys

The control board is another interesting piece of work. Mr. Brown had the board anchored to the floor as strongly as possible and then had it fastened rigidly to the wall so that there would be a minimum of vibration. All the wires are in conduits and insulated switch boxes, but Mr. Brown arranged the back of the board so any one of the instruments could be cut out of the circuit without affecting the other instruments. This was done by using "by-pass switches." Repairs can be made to any instrument while the operator continues to take readings from the pyrometer, or all the temperature recording instruments can be switched to the pyrometer for reading if desired.

The recording instruments on the board for both temperature and flow control are as follows: crude flow meter; temperature above and below tubes in still, front and rear; temperature of crude entering still and temperature of crude leaving still;

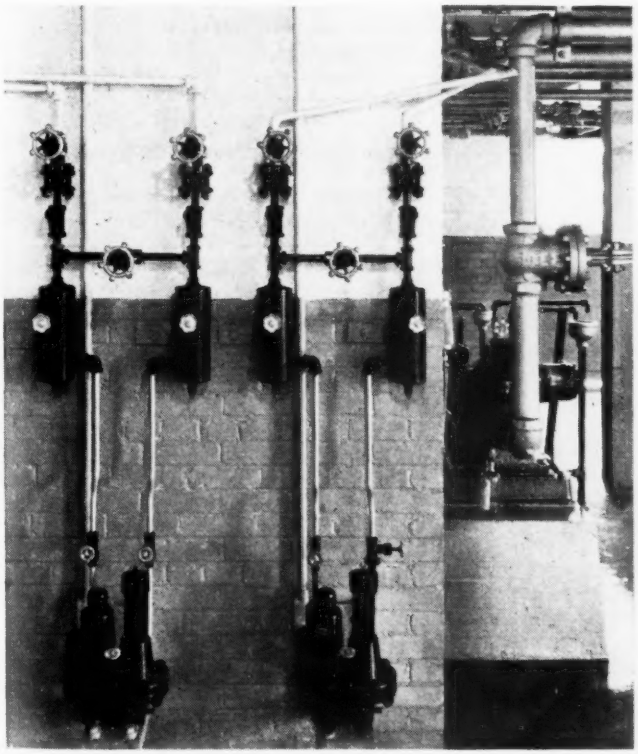


The water separators and reflux drums together with the after coolers are shown above. The four small pipes going into the brick wall are the ones which connect with the "look boxes" inside the control room

liquid level control for bubble tower; gasoline reflux control; kerosene reflux control and pressure on bubble tower.

The pyrometers indicate temperatures at the following points: crude to tube still; oil leaving tubes; bottom of bubble tower; bubble tower, kerosene section; bubble tower, naphtha section; bubble tower, gas oil section; fuel oil to storage; superheated steam system; tube still below flue gas, front and rear; tube still at front, in center, and at rear end.

The crude flow to the tube still as well as the liquid level in the bubble tower is controlled automatically by differential mercury column.



The two instruments pictured above are the mercury controls for the crude flow to the still and the liquid level control in the bubble tower. The one at the left is the liquid level control. The crude charging pump can be seen at the right, and above it the orifice valve, the pressure differential of which controls the crude charging pump

A liberal application of paint made the interior of the control room attractive. A coat of filler, two coats of flat and two of white and grey enamel were used. Superintendent Cutter thinks the additional cost of painting the unit is money well spent since it will be an incentive for the operators to keep the interior cleaner.

The accompanying flow chart outlines the system. The charging pump is located in the control room. The crude goes first through two Braun heat exchangers located on top of the condenser boxes. There heat from the gasoline vapors is picked up and the crude then goes to the water settler, which is an old Dubbs reaction

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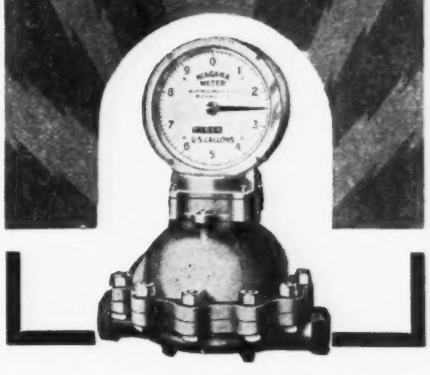

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chamber. From the water settler the crude goes through another series of Braun heat exchangers where additional heat is picked up from the fuel oil which has already passed through the fuel oil stripper. The crude finally passes into the tube still at a temperature of approximately 350 F.

The tube still has six burners and is fired from the front. An automatic control has been placed in the gas line near the stills. Neither temperature nor pressure are raised to the cracking point.

The hot oil and vapors pass from the still directly into the bubble tower which is approximately 10 by 100 feet. Gasoline vapors are taken off overhead, passed through the first series of heat exchangers, then through the condenser coils and into the water separator and reflux drum. The gasoline is taken off the top of the drum, through the after-cooler to run-down tanks.

A naphtha cut is taken off near the top of the tower. This stream goes into a naphtha stripper where superheated steam is injected through automatic control to take back into the tower the lighter fractions. From the stripper the naphtha stream goes through the condensers and then to a water separator and reflux drum. The kerosene and distillate cuts are handled in the same way. The strippers are located on top of the condenser boxes.

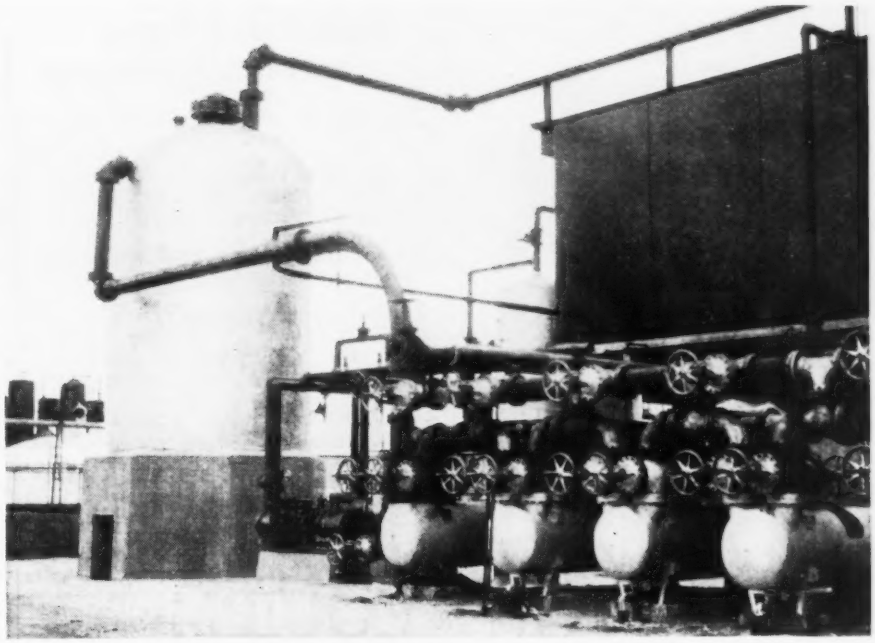
The fuel oil cut is taken off the base of the bubble tower into a stripper where superheated steam is used to take back the lighter ends. The fuel oil is pumped through the heat exchangers and finally to storage.

This unit manufactures an export grade 64-66, 375 e.p. gasoline, a blending naphtha, kerosene distillate or gas oil and fuel oil. By combining the high gravity gasoline and the naphtha a specification U. S. Motor gasoline is obtained.

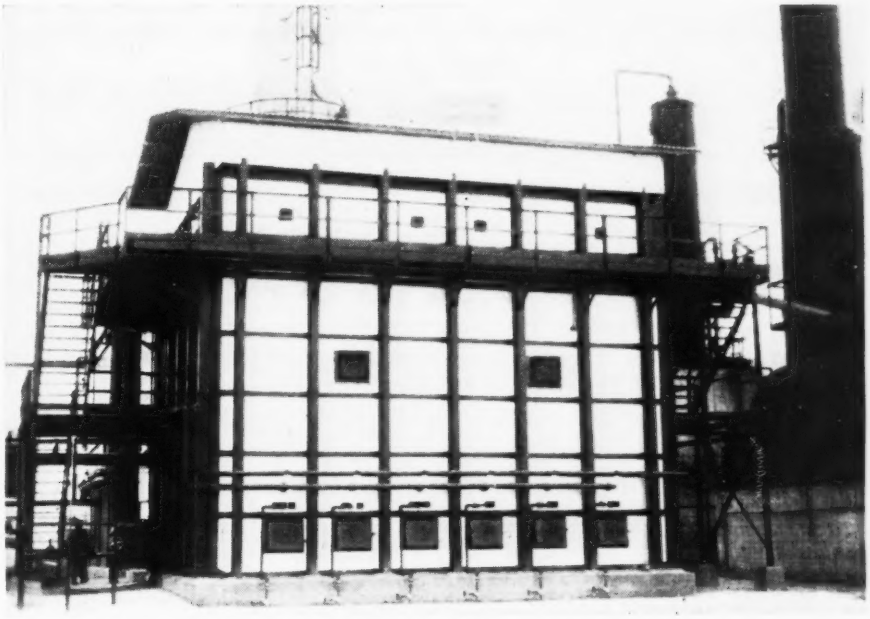
The fuel used is slightly less than 1.5 per cent of the throughput. The gasoline yield is approximately 34 per cent, with kerosene around 9 per cent and distillate 4 per cent. Fuel oil and losses make the remaining 53 per cent.

The fuel oil is charged to the Dubbs units, and the battery of shell stills which the new unit replaced now are used merely for rerunning the pressure distillate.

Steam consumption of the unit is approximately four pounds per barrel of charge. Fuel consumption as indicated above does not include steam requirements as boiler steam now is being used. Plans are now being made to use exhaust steam.



An old Dubbs reaction chamber was converted into a water settler. A series of Braun heat exchangers are shown at the right



Clean and white. This is the pipe still, front view

New Refinery Started At Laurel, Mont.

TULSA, Nov. 21.—Construction work has started on a new refinery to be built at Laurel, Montana for the Laurel Oil & Refining Co. The plant will be constructed by the Smith Engineering Co. and the first unit will cost approximately a million dollars. The plant will be in operation early in 1930, according to the present building schedule.

The Laurel Oil & Refining Co. was recently formed by a group of west coast and Kansas business men, headed by Alfred J. Deicher of Winfield, Kan. and F. W. Camp and Roscoe Nelson of Portland, Oregon. Banking interests of San Francisco are also associated with the new enterprise.

Mr. Deicher is well known in oil circles in the Mid-Continent. He formerly was general manager of the Empire Companies at Bartlesville but resigned about 10 years ago and formed the Emerald Oil Co. which operated in Kansas, Texas and Oklahoma. He also has been associated with several natural gas projects.

The plant will be located just outside the town of Laurel. It will be erected on a site of 103 acres, and plans have been made so that an additional unit can be constructed in the future.

The Smith Engineering Co. will in-

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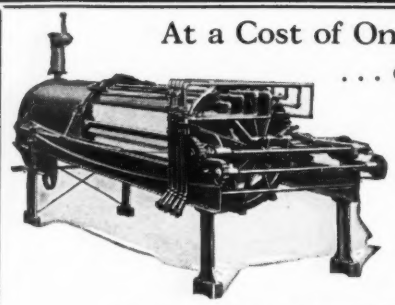

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stall a topping and reducing pipe still unit producing anti-knock gasoline and distillate, and running the crude down to heavy residuum, and also will construct a continuous coking and asphalt plant. The residuum will be transferred hot to the coking and asphalt plant.

A continuous treating system for the gasoline will be installed along with other necessary auxiliaries such as a steam plant, refinery transfer pump house, storage tanks, office building, and loading racks.

The plant will be operated on Oregon Basin crude, which is credited with having a high anti-knock rating. The field is located near Cody, in Park county, Wyoming. Laurel is only a short distance over the line in Montana. The town is located on the Yellowstone River.

The Oregon Basin crude has a gravity of approximately 21 A.P.I., and yields approximately 18 per cent gasoline, 8 per cent kerosene, and 67 per cent bottoms. A description of the field and the crude were carried in July 18, 1928 issue of NATIONAL PETROLEUM NEWS, page 23.

Foreign Opportunities

Reserved information may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, and its district and cooperative offices by duly registered firms and individuals upon written requests by opportunity number. The Bureau does not furnish credit ratings or assume responsibility as to the standing of foreign inquirers; the usual precautions should be taken in all cases, and where no references are offered it does not necessarily imply that satisfactory references could not be given. Correspondence may be in English unless otherwise stated.

41313.—Paraffin, Bogota, Colombia, agency.
41321.—Lubricating oil, Cochabamba, Bolivia, agency.
41360.—Lubricating oil and kerosene, New Delhi, India, agency.
41370.—Mineral oils (unspecified) Glasgow, Scotland, agency.
41416.—Fuel oil for domestic heating, Charlottetown, Canada, purchase.
41437.—Paraffin and scale wax, London, England, purchase and agency.
40720.—Lubricating oils and gasoline, Tegucigalpa, Honduras, purchase and agency.
41717.—Paraffin and petroleum, Paris, France, agency.
41747.—Lubricating oils and greases, medium and high quality, Glasgow, Scotland, agency and purchase.
41762.—Petroleum products, St. Denis, France, agency.
41763.—Naphtha solvents, hydrocarbons, and mineral wax, Paris, France, agency.
41766.—Paraffin wax, Hamburg, Germany, purchase or agency.
41623.—Refined white paraffin, Cali, Colombia, agency.
41627.—Gasoline, gas oil, batching oil, lubricating oil, petrolatum, paraffin and other petroleum products, Hamburg, Germany, purchase and agency.
41634.—Mineral and cylinder oils, Hamburg, Germany, agency.

Widespread Development of Automotive Diesels Is Not Anticipated

By A. Ludlow Clayden

TALKING to the National Petroleum Association at Atlantic City recently Henry M. Crane let fall some words of wisdom on automotive diesel practicability which ought to have the widest publicity possible. There is a wide spread idea that the diesel engine is fundamentally better than the gasoline motor and must eventually supplant it. This is very far from the truth, in fact except for certain limited fields it is highly improbable that automotive diesels will ever be nearly as suitable as gasoline engines.

There are some fallacies regarding diesel engines that are not appreciated even by engineers in general. A glance over a page or two of history brings these out very clearly. The original, practical gas engine supplied a cylinder through a mixing valve fed with gas and air. The mixing valve was so proportioned as to keep the gas/air ratio nearly constant for all degrees of opening. The valve acted as a throttle and also metered the fuel in proportion to the air.

Early gasoline engines used a vaporizer in which a very large surface of fuel was exposed to a relatively small amount of air, by means of wicks or multiple trays. in such vaporizers a dry vapor was formed and this was treated as a gas and led to the engine through a mixing valve identical with the gas engine valve. By using heat on the vaporizer this same method could be used today, the objection is the great size of the vaporizer necessary and the difficulty of proportioning the heat to the demand for fuel.

Such schemes were actually tried when gasoline first began to decrease in volatility, but the spray carburetor which automatically metered liquid fuel in proportion to the engine's demand for air, in turn controlled by throttling, proved the better system. In carburetor design the end sought has been to perfectly proportion the fuel to the air and while no perfect carburetor has yet been made the average of efficiency is very good. Thus in gas and gasoline engines the power or speed is varied by varying the amount of air admitted and metering the fuel in proportion.

In the diesel the amount of air is fixed and only the fuel is varied. Fuel is burned in an excess of air and speed and power are changed by altering the amount of fuel injected only. This has a great advantage in thermal efficiency because however small the amount of fuel used it is burned in air at maximum compression so that the energy obtained per unit of fuel is the same, whether it be burned at low power or at high, whereas the throttling type of engine works at best thermal efficiency only at a certain speed and at maximum power for that speed.

The same thing could be done with a carbureting type of engine if the bore were variable, or if the compression could be maintained constant by other means. For instance a supply of inert gas, such as nitrogen could theoretically be mixed with the air/gas mixture and the total amount of the charge left constant, only the proportions of combustible to non combustible varied. Attempts along this line have been made, using exhaust gas as the inert material. DeDion made many cars controlled by the period of exhaust valve opening and this has been a fairly general system for gas engine control in the past.

The fact that all these schemes have been abandoned or at least have fallen by the wayside, indicates that the ideal of higher thermal efficiency has been overestimated in importance.

Summing up this means that if better thermal efficiency comes to be of real importance there is plenty of scope to obtain it from engines using gasoline and engines not so very dissimilar from the present type.

Crane also pointed out another very common and important fallacy. Diesels are generally supposed to run on very cheap fuels. Large, constant speed constant power diesels actually do run on fuels that are very cheap. Such fuels are crude oil residues; waste material left over after the refinable constituents have been removed.

But only quite large engines use fuels of this sort; the great majority of diesels employ distilled fuels, fuels that

WHAT IS CRUDE OIL MADE OF?

COLONEL G. A. BURRELL brings up this question in relation to the science of refining, in Article 2 of his series on Modern Refining—Science and Practice, which is being published exclusively in NATIONAL PETROLEUM NEWS. This article appears next week.

Colonel Burrell partly answers his own question. He says crude oil is largely made up of paraffin, naphthene and aromatic hydocarbons and oxygen, sulfur and nitrogen compounds.

Paraffin base crude, he says, has long owed its preference in the trade to the paraffin hydrocarbons it contains.

"But paraffins, except the wax, have not been found in lubricating oil and wax lacks viscosity," he remarks, in commenting on the various properties of crude oil. "Besides, the wax is largely removed in the dewaxing process."

He adds that paraffin base oils possess greater resistance to oxidation, are less volatile for the same viscosity, and their viscosities change less with temperature than is the case with asphaltic oils.

In experimental work gasoline has been found to contain as much as 70 per cent naphthenes, the author goes on to say.

Naphthenic acids, he reports, are the most important petroleum acids, primarily found in crude petroleum and also extracted from the wash liquor produced by neutralizing distillates with alkali.

Studies of paraffin wax that have been made by various investigators are discussed.

(Read Article 2 in this series in the next issue of NATIONAL PETROLEUM NEWS.)

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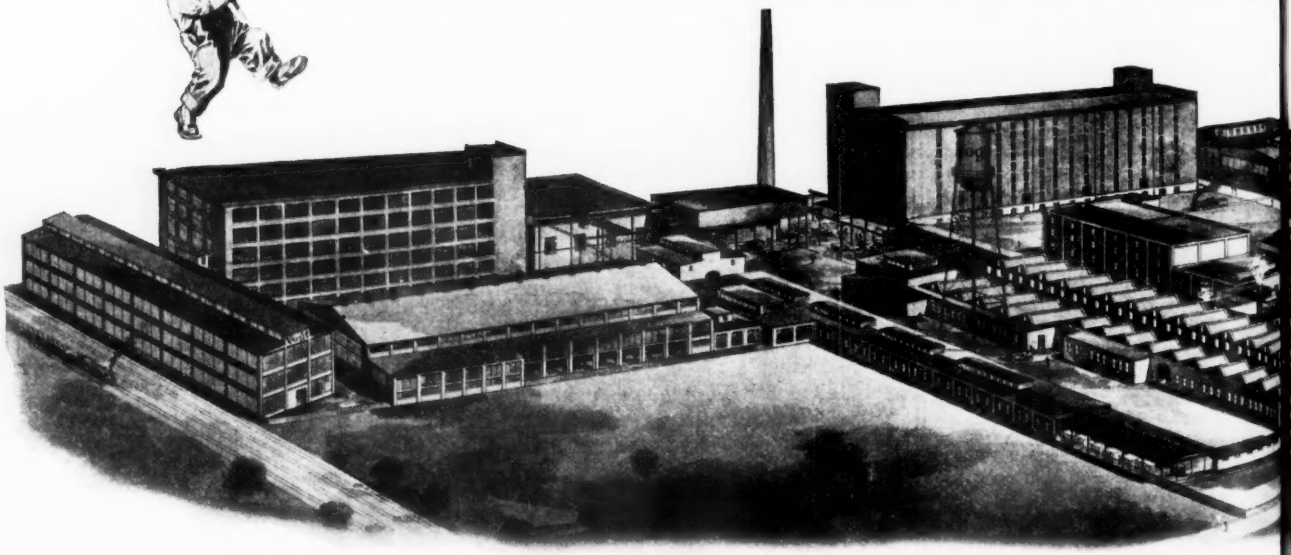

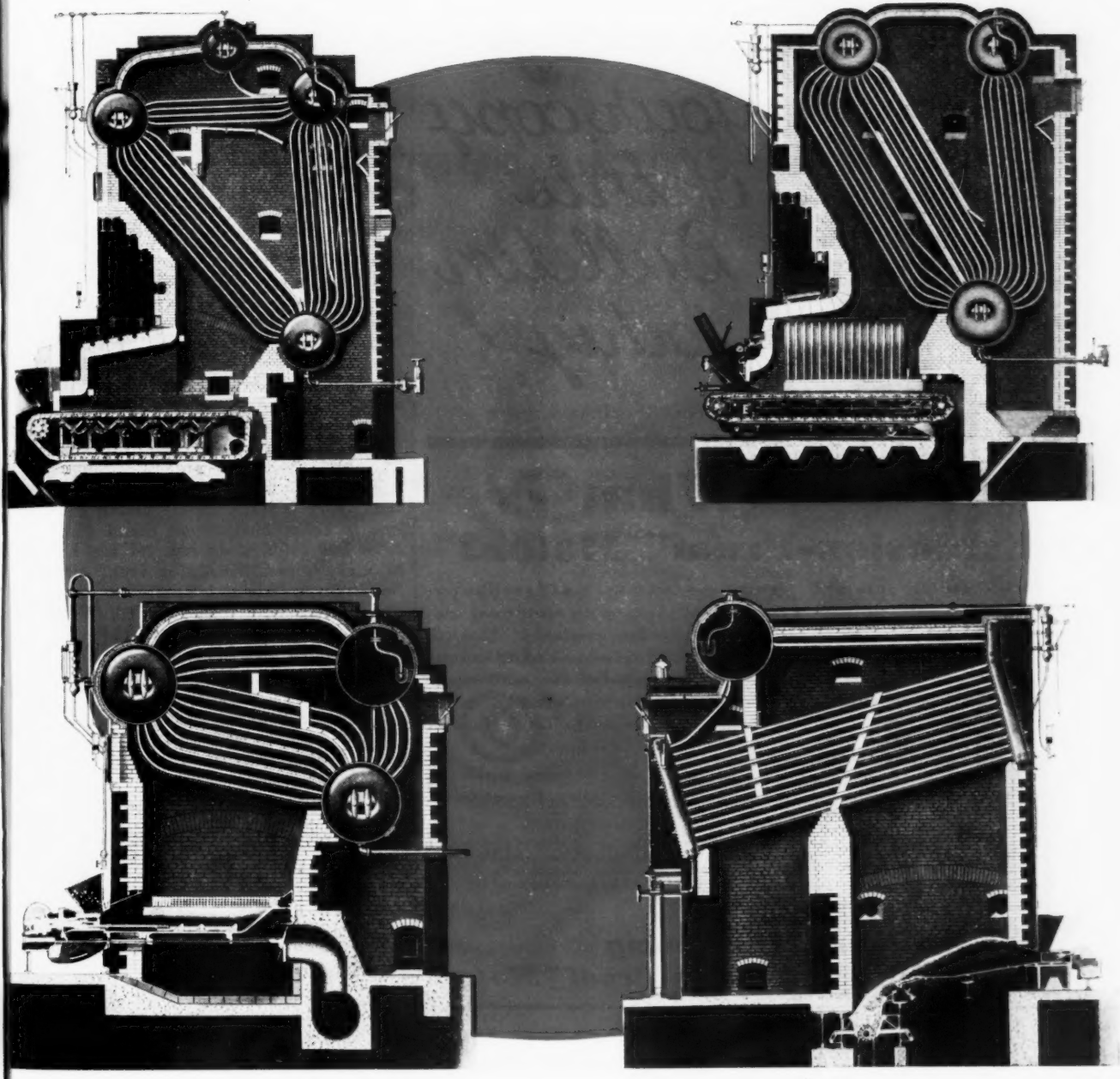

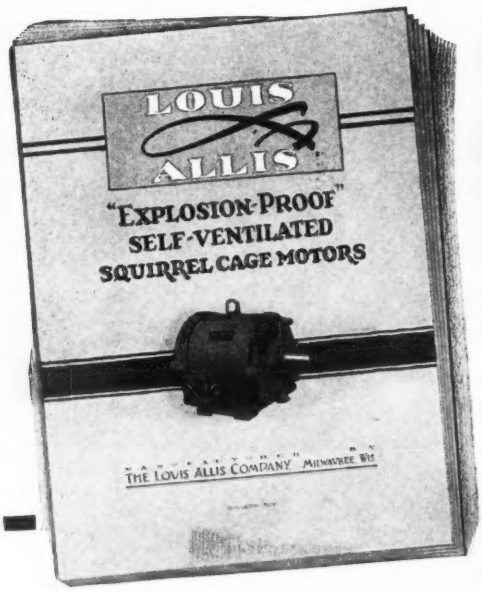

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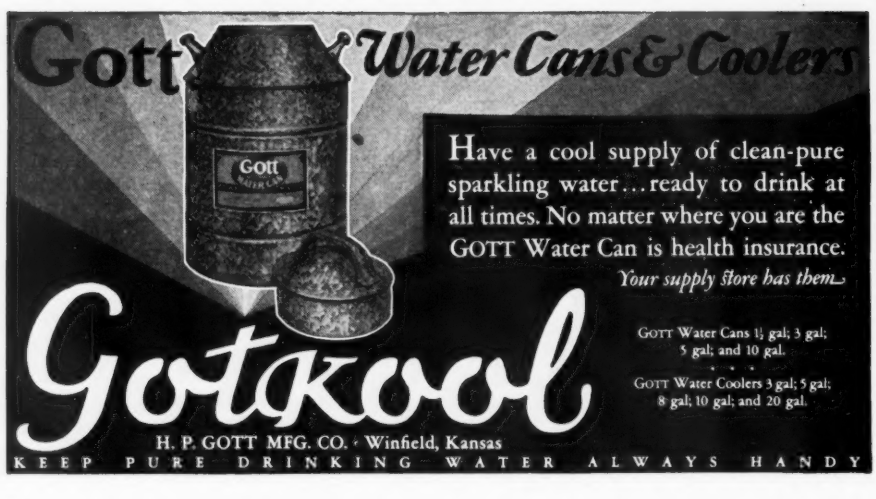
WARNING TO REFINERS

Do not confuse the Louis Allis "EXPLOSION-PROOF" Motor with so-called "vapor-proof" motors. Real "EXPLOSION-PROOF" motors must be specially constructed and must pass severe explosion tests to be approved by Underwriters' Laboratories for use in explosive atmospheres.

For safety and economy insist on Louis Allis "Explosion-Proof" Motors

LOUIS ALLIS "EXPLOSION-PROOF" *Electric* MOTORS

THE LOUIS ALLIS COMPANY
MILWAUKEE, WIS.
Motor Specialists for 28 Years — Offices in Principal Cities


Gott Water Cans & Coolers
Gott
Have a cool supply of clean-pure sparkling water... ready to drink at all times. No matter where you are the GOTT Water Can is health insurance.
Your supply store has them
Gotkool
GOTT Water Cans 1½ gal; 3 gal; 5 gal; and 10 gal.
GOTT Water Coolers 3 gal; 5 gal; 8 gal; 10 gal; and 20 gal.
H. P. GOTT MFG. CO. · Winfield, Kansas
KEEP PURE DRINKING WATER ALWAYS HANDY

differ from gasoline only in that they have higher boiling points and are not rendered colorless and are not treated for odor. Diesel engine "distillates" are cheaper than gasoline for one reason only, and this is that they are sold in large shipments. Leaving taxation out of the picture, the retail price of gasoline is twice or a little more than twice the refinery price for shipments comparable with diesel fuel shipments.*

This is because the cost of distribution, the cost of having gasoline available everywhere, is naturally quite high. If the diesel type fuel were wanted at every filling station, it would have to bear the same distribution cost. Refinery prices for diesel distillates are not today so very much under corresponding prices for gasoline, and *there is much more readily available gasoline in most crude oil than there is diesel fuel.* Today gasoline is being made from diesel distillates but refiners do not yet see how to make diesel distillates from gasoline. So a large demand for diesel fuel, distributed like gasoline, would necessitate a higher price at the pump than the gasoline price.

Yet again, as Crane also pointed out, small diesel engines need much more highly purified fuel than big engines. On a ship, for instance the fuel oil is preheated, passed through a centrifuge to remove sand and water and then filtered, before it goes to the engine and even so, with the cheaper fuels enough sand and sulfur is still present to cause wear. Smaller diesels using distillate have carbon trouble of a most aggressive sort if the fuel is not suitable, which means either selection of crude from which to make the fuel or treatment which costs money.

Look at it another way. A gasoline engine with six cylinders running at twenty miles an hour car speed gives about 200,000 power impulses per hour and uses a little over a gallon or say 4000 cubic centimeters of gasoline per hour. That means that each charge to each cylinder contains 0.02 cubic centimeter of gasoline. The diesel engine to justify itself must at least double the thermal efficiency and so must perform with a charge of one hundredth of a cubic centimeter of fuel per stroke. There are just about 100.000 drops gallon so the amount equal to 0.02 cubic centimeter is half a drop or less. A motor car diesel engine would have to function on charges between a quarter drop or less and say two drops, per power stroke. The metering of such small quantities is a sufficient mechanical problem, but even supposing this were surmounted, it follows that the degree of purity of the fuel has got to be very high.

(*Continued on Page* 91)

*This is not true of some of the special anti-knock and high volatility gasolines.

Home-Made Machine Speeds Painting Of Reclaimed Drums and Barrels

KANSAS CITY

JACK NOURSE of the Nourse Oil Co., Kansas City, has "come through" with another time and labor saving device for reclaiming used barrels and drums at compounding plants and warehouses. The first device was the vacuum cleaner for the inside of barrels. This one is a machine which speeds up painting to an almost unbelievable rate. As many as 167 barrels have been painted two colors in 80 minutes with the painter handling each barrel three times.

The new Nourse machine consists of an angle iron frame about one and a half times as wide as a 110-gallon drum is high. Two shafts are mounted in box bearings to the top of the frame and a third shaft is fixed to the frame about midway between the other shafts but a few inches lower. The frame is mounted on angle iron legs so it is in a horizontal plane 18 inches above the floor.

On each of the upper shafts inside the side rails of the frame are two flanged cones with the small ends of the cones pointing toward the center of the machine. The cone on the right of each shaft, looking at the machine from where the operator stands, is stationary but the cone on each shaft to the left is adjustable to the length of the drums to be painted.

One of the upper shafts extends outside the bearings at one end. A pulley is attached on one end and a sprocket on the other. There is a sprocket on an extension of the other shaft, or the one nearest the operator. The second shaft is driven by the first with a chain.

The whole machine is belt-driven with a five horsepower electric motor. The motor has a double pulley and a belt drives a one-stage air compressor which applies pressure to the paint pots and the paint guns.

Attached to the shaft fastened under the other two, are two adjustable fingers. At the end of this shaft is a lever. The device is used to throw the painted barrels from the machine to an inclined channeled plane down which the barrels roll like a bowling ball and remain on a rack until dry.

The painter adjusts the cones and fingers to the size of container he will put through. The fingers are set so they will be just outside the chimes and the cones are set so the barrels or drums will have about two inches of play. The operator then starts the motor. Immediately five to 12 pounds air pressure is applied to the paint pots which contain a quick drying lacquer, and 90 to 110 pounds to the paint guns.

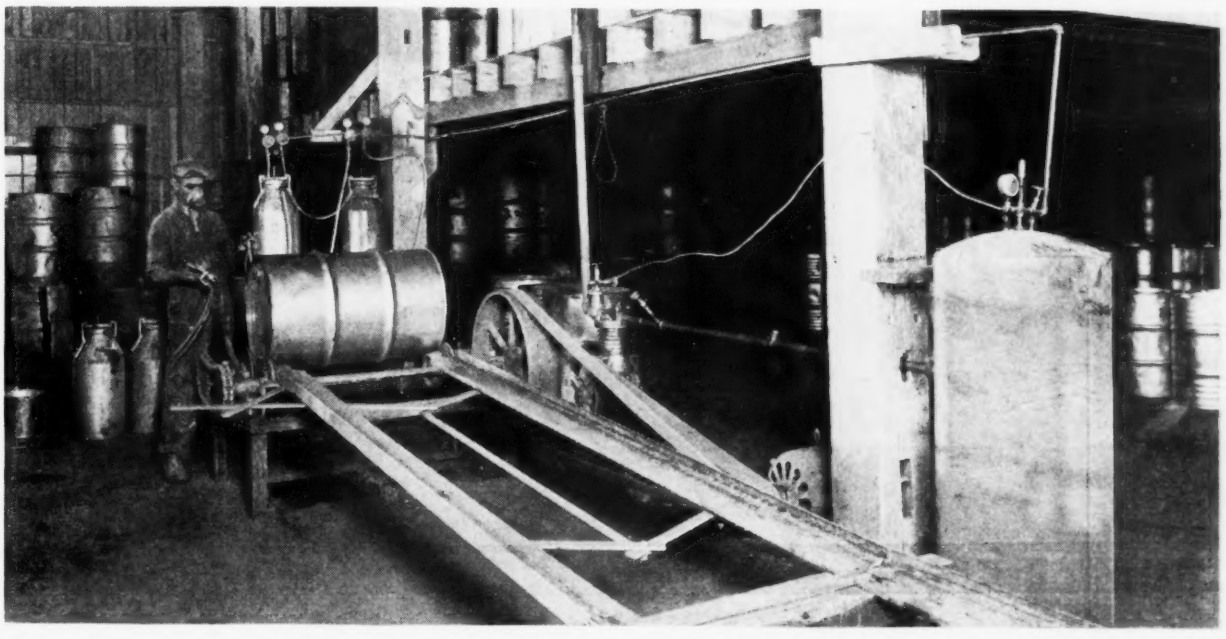
The painter then puts a drum on the cones which are revolving rapidly and with a gun in each hand paints one head one color and the side of the drum another color. He then steps to one side and paints the other head. He raises the lever on the ejecting device and the painted drum rolls down the inclined plane.

When the writer saw the machine in operation, 30-gallon drums were being painted at the rate of four a minute. The painter had to carry each drum 10 or 12 feet from a stack to the machine.

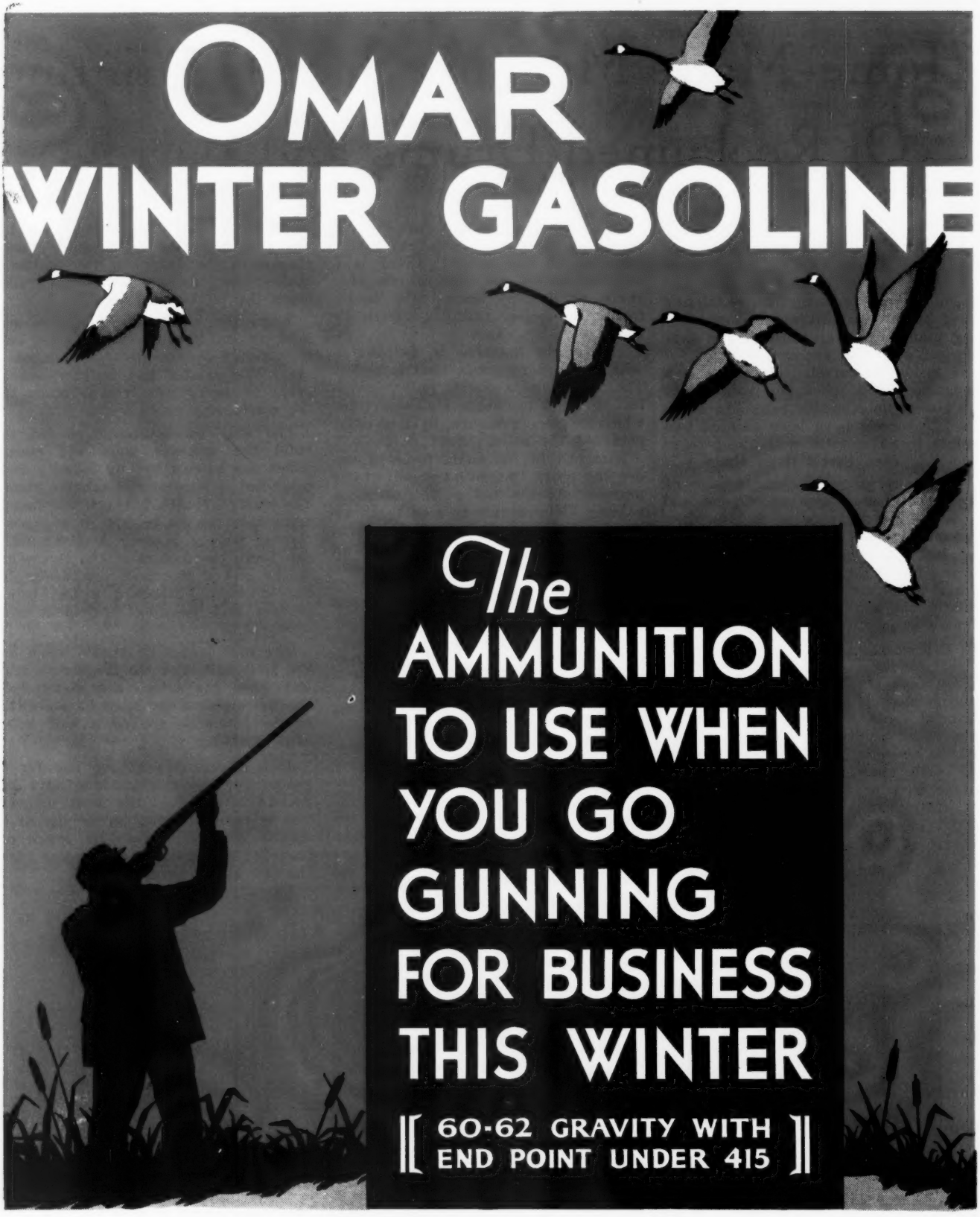
The only special parts needed to build the machine were the cones which can be cast by any foundry and machined in any small machine shop. The pulleys, shafts, boxings, sprockets, and chain can be bought in any machinery supply house. A blacksmith can forge the fingers of the throwout device and a mechanic can assemble the machine. Standard motor, compressor and painting equipment are used.

The rack leaves no visible mark on the sides although the lacquer is still wet when the drums are thrown off the machine. They may be stenciled or decalcomania applied a half hour after painting.

Jack Nourse has not applied for a patent for the machine and says he doesn't intend to. His first innovation in barrel reclaiming, the use of a suction cleaner to clean the inside of barrels, has gained widespread use the last six or seven years.



Jack Nourse's drum painting machine which turns out two-color jobs at the rate of better than two a minute. Four small containers may be painted a minute. The operator wears a breathing mask



OMAR

REFINING COMPANY

Roberts Building, Tulsa, Okla. . . *Northwest Office:*—Baker Bldg., Minneapolis

Small Independents Not Perturbed By Big Company Mergers

CANTON

INDEPENDENT jobbers are not perturbed about mergers and talk of mergers. At least many of the Independents through north central Ohio are not worried about the big companies swallowing up all the smaller jobbers.

Some of these Ohio jobbers, in fact, think the current merger trend will be beneficial to our industry and in turn their own business will be benefited.

"Mergers are helping to freeze out the undesirables", said Charles O. Hubbs, Independent jobber at Mansfield, Ohio. "If this condition is good for the big companies naturally it will be good for the small companies".

Mr. Hubbs has likened the marketing branch of the industry to the old days when the breweries set up any one in business from cuspidors to a stock of beer. He thought industry was making an attempt to correct this error, and that mergers was one of the steps.

The code of ethics is another step in the right direction to straighten out bad marketing practices, Mr. Hubbs said.

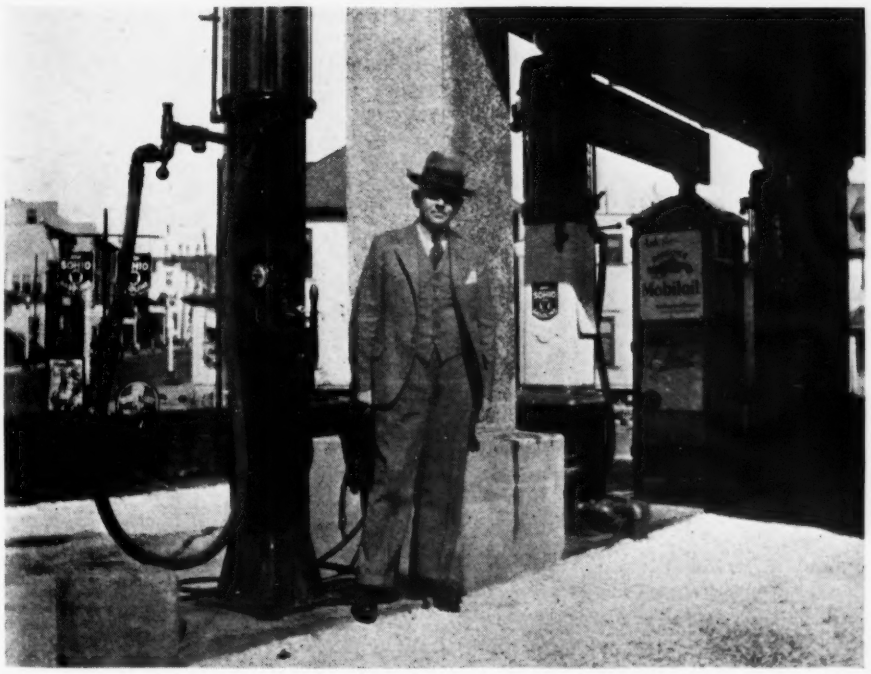
In a large city in northern Ohio an Independent jobber named over recent mergers in his territory, pointing out that in most of the cases some bad practices were eliminated. In most cases the new owner managed the merged company according to its established marketing practices and removed objectionable competition for all other companies in the city.

Watching accounts receivable is the nub of the Independents independence is the opinion of F. S. Arbogast, operating the Mutual Oil Co., at Tiffin, Ohio. He believes that if the Independent watches his credit extensions his business will be in good shape and he will not have to worry about selling out.

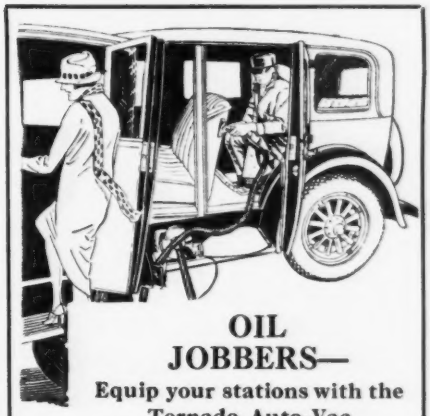
Last spring when credit conditions became tight in his marketing territory Mr. Arbogast dropped all questionable accounts, these were mainly on farm tankwagon routes. Mr. Arbogast operates a service station in Tiffin, has two trucks and bulk plant storage of 85,000 gallons. His brand name is Mutual.

To his undesirable farm accounts he gave out the story that he was curtailing deliveries and removing one truck from service. Mr. Arbogast has been secretary of the Tiffin Farmer's Exchange for years, and has been county sealer of weights and measures and deputy sheriff on traffic duty. Through these offices he has an intimate knowledge of conditions throughout the county where he markets.

With this information he was able



Charles O. Hubbs, oldest Independent jobber in Mansfield, Ohio, standing on the pump island at his first drive-in service station built eight years ago. This is the second station built in Mansfield

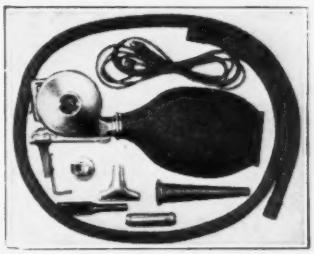


OIL JOBBERS—

Equip your stations with the Tornado Auto-Vac

Give your customers a 100 per cent vacuum cleaning job with the new TORNADO Auto-Vac Cleaner—the most powerful and efficient commercial auto cleaning device ever built. Hundreds of oil jobbers have standardized on the TORNADO—stimulates sales! Attach this advertisement to your letterhead and mail for special offer to oil jobbers. No obligation.

Breuer Electric Mfg. Co.
860 Blackhawk St., Chicago, Ill.



Get full value from your advertising signs

REMOVE dirt and grime from roadside signs and illuminated advertising globes by cleaning them the Oakite way. Then you can get full value from every inch of display space.

Oakite cleaning washes off all trace of dust, stains and oil film. Leaves advertising globes brilliant and attractive. Makes signs legible and dirt-free. And Oakite materials do this work quickly, thoroughly—without scrubbing and scraping—at amazingly little expense for supplies and labor.

Our booklet "Oakite in the Oil Industry" tells why and how. Write for a copy.

Oakite Service Men, cleaning specialists, are located in leading industrial centers of U. S. and Canada.

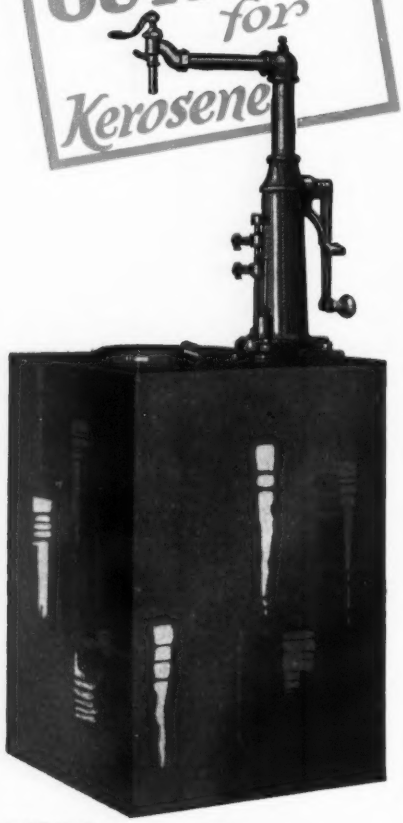
Manufactured only by

OAKITE PRODUCTS, INC.
42C Thames St., New York, N. Y.

OAKITE
Industrial Cleaning Materials and Methods

Bennett Pumps Corporation
QUALITY BUILT
BIG BERTHA
Gallon Dispensing KEROSENE Tank Outfits
Muskegon, Michigan
Symbol of Quality

SQUARE TANK OUTFITS for Kerosene



All Moving Parts
TOTALLY ENCLOSED
All Quantity Stops
PRECISELY ADJUSTABLE

MODEL 1065, 65-gallon capacity, 22" x 22" x 33½" high x 58" high over all Big Bertha Kerosene Tank Outfit with 14-gauge head and shell mounting Bennett exclusive 100% enclosed gallon, half gallon and quart dispensing kerosene pump with cylinder completely suspended within tank. All moving parts are enclosed and protected. Positive non-dripping shut-off nozzle is incorporated.

Other sizes, 120-gallon capacity, Model 1205 tank 28¾" square by 35½" high. Over-all height 60". Round outfits are Model 1060, 60 gal. capacity, 22⅜" diameter; and Model 1100, 110 gal. capacity, 30" diameter.

All tanks made of single pickle steel free from weak spots or pin holes and beautifully finished in your trade colors.

— Write for —

Complete bulletins on Big Bertha Round and Square Tank Outfits and Pedestal Pumps for dispensing kerosene and for dispensing gasoline to Muskegon. Bennett Export Corporation, 32 Broadway, New York City.

to cull out questionable credit accounts and so fortify his own business and credit.

The Independent jobber should stay in his own marketing field and not bother with business that is out of his reach is the opinion of F. K. Samuel, secretary-treasurer of the Citizens Oil & Gas Co., Canton, Ohio.

Some of the large commercial accounts, such as big companies operating over wide territories, are not available to the local jobber, he pointed out. The local jobber can wipe these accounts off his prospective customer slate and concentrate his merchandising efforts to selling the local commercial and one-car owner accounts.

Theft Toll Heavy in Sale Of Accessories

FORT WAYNE, Ind.—Accessories were taken out of the stations of the O'Day Oil Co. here when it was found that all the money was not going into the cash register and that station attendants were tempted to steal.

All accessories were charged to the station at retail price. When accountings were made the stations had sold more goods than there was cash to cover these sales. "We were making too many crooks and we could not catch them so we dropped accessories," said T. J. O'Day, owner of the company.

At stations leased from the company Mr. O'Day permits accessories to be sold. Those stations with poor gallonage are leased to responsible men. Through leasing the company hopes to build up business, and the sales from accessories are allowed so the leaser can add to his profits.

Leased stations are allowed to sell such items as electric light bulbs, fan belts, tobacco and the like.

New England Oil Men Discuss Aviation

NEW YORK, Nov. 21.—Many phases of aviation with which the average man is not familiar were explained to members of the New England Oil Men's Association, meeting Nov. 13, at the University club in Boston. It was the first of many winter meetings which will follow.

Explanation of safety devices now in use in aviation, how a plane is handled and the growth of flying, was made by Mr. Brown, of Boston, Traffic Manager of the Colonial Airways, a company recently established which operates a passenger line between New York and Boston.

Forty-five members of the association attended the meeting. It started with lunch at 12 o'clock and lasted until well into the afternoon. Representatives of the Atlantic Re-

En-ar-co
MOTOR OIL
White Rose
GASOLINE

YOU will make money if you handle these nationally advertised brands.

All grades of lubricating oils and greases.

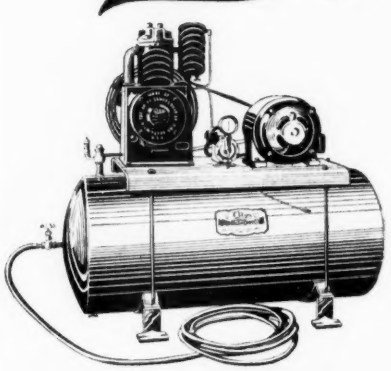
The National Refining Co.
Cleveland, Ohio

ALL-PURPOSE UNIT

In addition to tire inflating you have to do Paint Spray work, you operate one hydraulic hoist or you have air operated gasoline pumps.

You need this 2 H.P. unit with 60 gallon tank, which we are offering at a remarkable price. Remember, there are 20 years of compressor building behind every 'Oro' Air Compressor.

The Oro T 58
GOOD as GOLD



Ask your jobber to sell you for $215

If your jobber does not carry, ask us.

THE AU-TO COMPRESSOR CO.
201 Mulberry St. Wilmington, Ohio
Export office, 126 Liberty St., New York City

fining Co., Gulf Refining Co., and The Texas Co., members of the Massachusetts sub-committee of the Code of Ethics, also were there.

Ray Adams, Providence, R. I., associated with the Pennsylvania Petroleum Products Co., and secretary of the association, was instructed to write a letter to each member of the association asking them to sign the Code of Ethics. Any member who does not sign will be asked to give his reasons for not doing so. Mr. Adams will make a report on these letters at the next meeting Dec. 2, which probably will be held at the University Club.

Automotive Diesels

(*Continued from Page* 84)

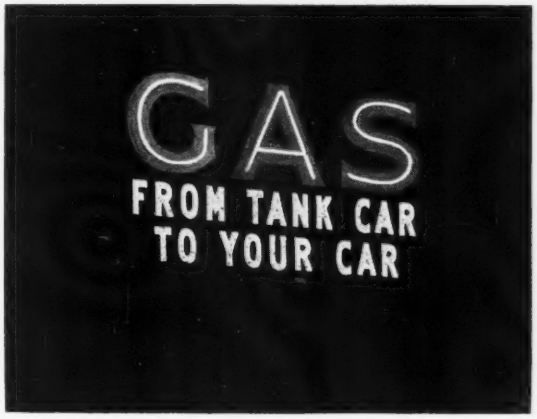
and also that the *viscosity* could only be allowed to vary within fairly close limits.

Of course none of these things are beyond possibility, and the coming of a heavy fuel engine for classes of service where the inflammability of the fuel is very important cannot be doubted. First the airship, second the airplane and third the motor boat. In all these the safety factor is the most important, and a better thermal efficiency is also to be desired so as to reduce the weight of fuel that has to be carried for a given trip. Of course slightly better thermal efficiency is required of the diesel even for equivalent thermal efficiency with a gasoline using engine because pound for pound gasoline contains more energy than fuel oil and it is the *pound* comparison that counts for aircraft not the *gallon*.

The development of a number of good heavier fuel engines for air craft is very much to be encouraged. The problem is a little simplified by the lack of necessity for an automobile degree of flexibility in speed and power ranges, also the larger size simplifies the fuel metering problem. The aircraft engine being an accomplished fact, its applicability to other types of automotive equipment can follow, but the time to talk about truck or bus diesels is *after* there are some thousands of aircraft diesels in daily use.

FORT WAYNE, Ind., Nov. 21.—The Klenzmotor Corp. has been organized here to manufacture and sell the Klenzmotor Automotive cleaning machine primarily for cleaning crankcases, transmissions and differentials. It can be used also for spring spraying, clutch cleaning and for washing the exterior of motors, the company says. It is made in either hand or electrically operated models. It is portable and can be moved around

OUT OF PASSING TRAFFIC



. . . will come to you increasing numbers of motorists if you will clearly light the way with an electric sign.

Most easily seen and surely read, both day and night, are Flexlume electrics which, tho not higher priced, are unique in design and superior in construction. All types from which to choose:

NEON TUBE,
EXPOSED LAMP,
RAISED GLASS LETTER,
DESIGNS COMBINING THESE ILLUMINATIONS

Our specialists in electric sign design will submit a color sketch, entirely free of charge, of a display to meet your exact needs. Substantial discounts on duplicate signs. Write FLEXLUME CORPORATION, 2070 Military Road, Buffalo, N. Y.

Factories at Buffalo, N. Y. and Toronto, Can.

FLEXLUME

FLEXLUME
ELECTRIC DISPLAYS

SALES AND SERVICE OFFICES IN CHIEF CITIES OF U. S. AND CAN.

YOUR CUSTOMERS KNOW *that* UNDERINFLATION and OVERINFLATION *cause* 50% of Tire Trouble

Driving home the evils of pressure carelessness has become the religion of tire makers, car builders and service men. Day after day, and month after month, the public is being told to eliminate tire troubles at their source—to safeguard tire life by maintaining correct inflation—always, under all conditions.

The result is that motorists have become "pressure minded." They know that as little as 10% variation in pressure spells mileage life or death. They know that a deviation of three or four pounds from recommended pressure exacts its penalty in shorter tire life and premature repair bills—***that it causes 50% of all tire troubles.***

That's why millions of car owners today demand measured air—air that's delivered automatically, with absolute accuracy. ECO TIREFLATOR gives it to them—positively and quickly—eliminating guesswork—simplifying pressuring service.

(Before investing in new air compressor equipment, write for ECO Air Compressor Bulletin. All ECO Compressors are equipped wirh the exclusive, patented "ECO-MATIC" Tank Drainer THAT DELIVERS DRY AIR—ALWAYS!)

SERVICE STATION EQUIPMENT CO., LTD., Bryan, Ohio
SERVICE STATION EQUIPMENT CO., LTD., Toronto and Winnipeg
BENNETT EXPORT CORP., 32 Broadway, New York

Air Must Be Measured—Accurately—Automatically

Write for "TIREFLATOR" Bulletin

The station that rings the bell—symbol of complete and perfect air service.

Defining Gasoline, in Terms of Motor Car Performance, to the Public

CLEVELAND, Nov. 22

HOW can the characteristics of a gasoline that make it a better motor fuel than some other gasoline be brought to the attention of the public, in advertising, in such terms that the public can comprehend how performance of its motor cars is affected?

This question has puzzled many an oil company executive and his advertising counselor when the problem came up of introducing a new motor fuel to the public.

How can such terms as initial boiling point, volatility, knock rating, sulphur content, and gum content be given a popular definition that will get across to the public, now so fed up with the volume and intensity of advertising messages forced on its consciousness that at best it gets only a fleeting impression from each?

Again, motor gasoline is produced by certainly one of the most spectacular manufacturing processes known to industry. Heat and pressure are used to a high degree. The stills and towers are powerful in appearance and far different from the equipment found in manufacturing plants generally. Control systems under which the plant operates are marvelous to the understanding of the layman.

Many oil companies, in their advertising of their motor fuels, show photographs of their refinery, or part of the refinery equipment, and they label it for what the industry knows it—a tube still, a fractionating tower and so on—and it's extremely doubtful if the readers of that advertising get any comprehension of the size, or costliness of that equipment, or the operations that go on in it.

The Standard Oil Co. of New Jersey recently put on the market a new non-premium grade of gasoline. It calls it the new-processed "Standard" gasoline. It introduced this new grade to its dealers with an article in its regular dealer magazine which comes as close to explaining the various qualities of that gasoline in terms of ordinary language as has probably been done.

The story of that new gasoline was told the public in five full-page newspaper advertisements which carry photographs of a good part of its refinery equipment for manufacturing and handling gasoline. The ads carry captions which give the reader at least some impression of the size and strength of that equipment and the nature of operations to which it is subjected. That advertising was carried in newspapers throughout the company's territory.

Following is that portion of the text of the message in the dealer magazine which describes the various qualities of the new gasoline:

"In the first place—Maximum mileage. A gasoline must *not* have too low an initial boiling point (too volatile). If it has, the result is wasteful evaporation in the tank. Miles of driving blowing away into the air. Again, if a gasoline is too volatile, it may cause 'gas lock' with resultant bucking at low speeds and stalling at stop lights or street intersections when the motor is hot.

"('Gas lock' occurs when gasoline in the carburetor or feed line of a car is too volatile for normal operating temperatures, partly vaporizing, and the gas or vapor bubbles then present in the gasoline prevent proper flowing of the gasoline through the carburetor jet. In certain makes of cars the location of the fuel lines, carburetor or vacuum tank in relation to the exhaust manifold is liable to cause 'gas lock.') The new 'Standard' is *not* too volatile.

"'Standard' Is Balanced Fuel

"BUT at the same time a gasoline must possess a sufficient volume of volatile particles (percentage off at 158 degrees F.) to give proper carburetor mixture for prompt starting, rapid acceleration and *satisfactory idling*. Elimination of wasteful choking and unnecessary gear shifting on hills or in traffic is essential in providing maximum mileage. A very careful balancing of the volume of volatile elements is therefore necessary to produce a perfect gasoline. *New 'Standard' is a perfectly balanced gasoline.*

"From the motorist's viewpoint, smooth performance through 'knockless' miles (an even flow of power) is as important as mileage. More and more high compression motors are being driven. Hence the greater the demand is for a non-premium gasoline with low 'knock' rating.

"It takes an excellent crude base, distilled with care, and an experience in cracking extending through years to make a gasoline of such quality. It takes the latest improvements in cracking coil design, the latest refinery methods. And, too, it takes a huge organization and mass production to manufacture such gasoline as 'Standard' at non-premium prices.

"Sulphur Content Is Very Low

"In making gasoline, the Standard Oil Company of New Jersey also considers a requirement that many motorists are apt to overlook; one that contributes greatly to motoring economy—*no repair work or inconvenience resulting from continued use.* For this reason, the sulphur content of 'Standard' Gasoline is kept well within specified limits.

"Why? Because too much sulphur in gasoline coming in contact with the metals from which supply tanks, vacuum tanks and carburetors are made will cause the formation of scale (iron sulphide, copper sulphide, etc., depending upon the metal).

"This scale, carried forward in the fuel system to the vacuum tank and the carburetor accumulates gradually on the strainers until the flow of gasoline and consequently power become noticeably uneven. Lean fuel mixtures and sluggish or jumpy operation of the motor results. Likewise, corrosion caused by excessive sulphur in gasoline frequently enlarges the carburetor jet so that the needle valve has to be adjusted.

"(Corrosion of the carburetor jet seldom results in clogging because the gasoline is passing through this opening at a rapid rate. And whatever scale is formed is carried away; and the jet becomes proportionately larger. This results in too rich a carburetor mixture, necessitating adjustment.)

"Quick Starting With 'Standard'

"SOME starting trouble is traceable directly to the corrosive action of sulphur. An accumulation of scale in the carburetor may prevent the float needle valve from seating properly. Therefore, when the engine is shut off and allowed to stand for some time the gasoline drains out of the carburetor and the vacuum tank. Trouble accompanies the next starting attempt—heavy strain on the starting motor, the battery, and considerable loss of time. Sufficient fuel must be sucked from the fuel tank to the vacuum tank and thence to the carburetor before the motor can be started and kept running. *In cutting the sulphur content of the new 'Standard' Gasoline to the minimum the Standard Oil Company of New Jersey ensures the regular user against these sulphur troubles.*

"Gum content, too, is a very important factor. It must be kept low.

There must be the minimum of sticky, gummy substance remaining in the finished product which could accumulate in the carburetor screen—or which might remain on the valves or intake manifold.

"'Standard' Develops Full Power

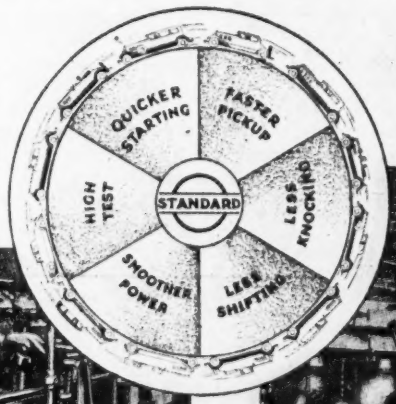
"For example, consider the possibilities of gum accumulating on the walls of the intake manifold and the effect such deposits have on the operation of a gasoline motor. After the fuel has been mixed with air in the carburetor and heated somewhat in passing through the intake manifold excessive gum is likely to adhere to the manifold walls, valve stems or faces. As these deposits build up, resistance to the flow of the mixture increases with a resulting decrease in the pressure at which the mixture is admitted to the combustion chamber.

"Gum accumulated on the intake manifold causes loss of power—in extreme cases as much as 10 per cent. When gum accumulates on the intake walls, the inflow of air and gasoline vapor to the cylinder is restricted.

(*Continued on Page* 100)

ANOTHER TRIUMPH OF LEADERSHIP

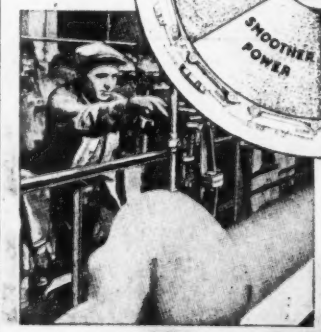
the new-processed "STANDARD" Gasoline made by latest and best refining methods... but read for yourself the story of this wonderful high-test gasoline

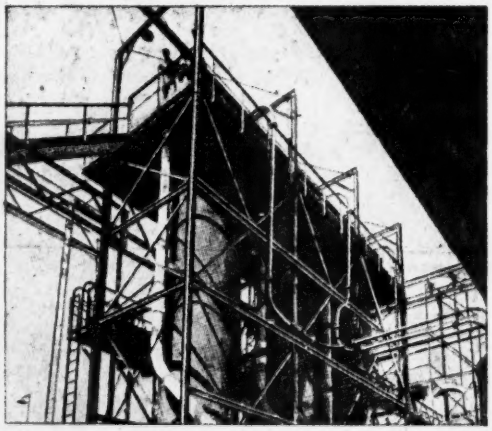


FROM THE ROARING INFERNO the distillates pass into the huge separating drums where heavy bottoms and impurities are removed. Nothing reaches your motor except pure, rich, new-processed "Standard" Gasoline.

BUILT TO PLEASE THE PUBLIC. Huge are the giant cracking stills erected to produce a popular-priced gasoline better than any now sold to motorists.

Hotter than the fabled Vulcan's furnaces is the searing heat that literally "tears" the pure, rich gasoline from the crude oils. No wonder this new-processed "Standard" Gasoline is smoother-powered.





Skyscrapers of poured cement—in which the pure, crystal, new-processed "Standard" Gasoline is literally "cracked out" of super-heated and compressed heavy oils. Night and day these huge separators turn out high test "Standard" Gasoline to fill the ever-growing popular demand.

◆ ◆ ◆ ◆ ◆

NO HOLIDAYS. Day and night the refinery is alive with industry. The monster fire boxes never cool. The giant crackling coils are on twenty-four hour duty to care for the tremendous increase in new-processed "Standard" Gasoline consumption.

NO GUESSWORK in this "Standard" control room. Trained experts constantly watch the big-faced meters. Heat and pressure can deviate no more than a point or two before corrected. Checks and rechecks, tests and retests are continuously made to insure a constant supply of uniform new-processed "Standard" Gasoline at no extra cost.

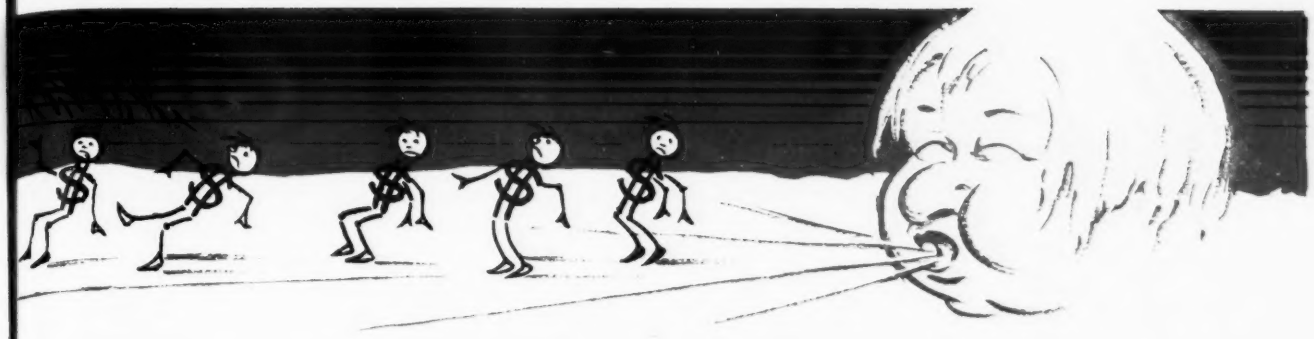
AFTER months of patient experimentation and the installation of entirely new refining equipment, we offer the motoring public a truly balanced gasoline—a gasoline with no one quality sacrificed at the expense of any other.

The new-processed "Standard" is not better merely on one or two points. It possesses in a balanced combination ALL those qualities which experts agree go to make up an all 'round superior motor fuel. Quicker starting. Quicker pickup. Smoother power. Less knocking. You can judge the new-processed "Standard" on any one of these specifications, or in combination. However you test it, it sets a new record in motor performance. And yet you pay no more for it than for ordinary or inferior gasolines. Sold everywhere at all "Standard" pumps. Test it today.

"STANDARD" GASOLINE

NEW-PROCESSED HIGH-TEST

One of the full page advertisements announcing the new Standard gasoline



Do your gasoline profits slide out of the picture in winter? SILENCER Gasoline is an all year 'round seller, but it is a profit-saver to many jobbers in winter. Motorists now can be easily sold on SILENCER, and the EXTRA SALES and EXTRA PROFITS help make up for U. S. Motor gallonage loss. And motorists won to SILENCER stay with it, winter and summer. Ask for full information.

THE SILENCER CHALLENGE

Take a sample from any Silencer tank car you buy. Send to one of the two recognized laboratories listed below. If Silencer does not meet EVERY SILENCER SPECIFICATION, including 40 to 50% benzol equivalent, we will pay for the test and will refund your premium paid.

CONDITIONS

1 Jobber sample must be sent to one of the two following disinterested authorities:
KANSAS CITY TESTING LABORATORY
Kansas City, Missouri
DR. GEORGE G. BROWN
Ann Arbor, Michigan

2 Sample must be accompanied by jobber's affidavit citing tank car number from which sample was taken.

3 Burford Oil Co. must be notified so that we may send our check sample from car for analysis at same time.

THE SILENCER SPECIFICATIONS

40-50% Benzol Equivalent . . . Good Benzol Odor . . . initial 90-100 . . . 10% off at 158 . . . 50% off at 282 . . . 90% off at 390 . . . end-point 400-410 . . . doctor, corrosion, sulphur and gum O. K. . . . color red.

from Guaranteed 100% PURE PENNSYLVANIA OIL Permit No. 26

Pennsylvania Grade Crude *—Swan-Finch Refined*

KEROSENE

Pardon the *superlative* —but Pennsylvania is admittedly the *best* Kerosene produced in the United States. Because it burns hotter and cleaner, it permits a larger flame and gives more light and heat without smoke and smudge. Its quality is prized by users of lamps, lanterns and stoves, whether in the home, stable, incubator or chicken coop. The rural trade prefers Swan-Finch Pennsylvania Kerosene.

CYLINDER STOCKS—*635 Flash*

Swan-Finch Cylinder Stocks—refined at Warren—even "peaks" most Pennsylvania Cylinders—and that's praise indeed! Only from Pennsylvania Grade Crude can Cylinder Stocks with a flash of 600, or above, be made. Hence the world demand.

600 STEAM REFINED STOCK

Superior in filtering qualities, Swan-Finch 600 Fire, which has a flash of 540-550, is unexcelled for the manufacture of Bright Stock—and in turn for Motor Oil.

Write, wire or 'phone for prices and deliveries

SWAN-FINCH REFINING COMPANY
205 E. 42nd Street, New York

SWAN FINCH
100% Pennsylvania Oils

Since the final compression pressure is dependent upon the pressure of the charge before compression, restriction of the charge admitted to the cylinder affects the final compression pressure. As lowering of compression pressure means lowering of power, gum accumulated on the intake manifold means loss of power.

"Loss of power means lower fuel efficiency (less miles per gallon), lower rate of acceleration and lower maximum speed. Hence, excessive gum in gasoline has a detrimental effect upon these very important features of motor car performance.

"But what about the effect of gum accumulation on valve stems and valve faces? Inevitably, sluggish operation results. Timing is rendered more or less irregular—and this can be corrected only by going to the expense of getting at and cleaning the valves."

Herewith is published part of the captions accompanying the photographs of refinery equipment, which are liberally used in the newspaper advertising.

Below a photograph of a control board is printed; "No guesswork in this 'Standard' control room. Trained experts constantly watch the big-faced meters. Heat and pressure can deviate no more than a point or two before corrected. Checks and rechecks, tests and retests are continuously made to insure a constant supply of uniform, new-processed 'Standard' gasoline at no extra cost."

This is to be found alongside a photo of reaction chambers; "Skyscrapers of poured cement—in which the pure, crystal, new-processed 'Standard' gasoline is literally 'cracked out' of super-heated and compressed heavy oils."

"Hotter than the fabled Vulcan's furnace is the searing heat that literally 'tears' the pure, rich, gasoline from the crude oils," is the text with a picture of the front of a battery of stills.

"Blast furnaces—so hot they would wither your hand in an instant—heat the raw stock before it passes into these huge towers to be literally wrung clean of its pure, crystal-clear, high-test gasoline," is the caption under a picture of two fractionating towers.

A construction photo carries this line: "Not yet obsolete, but the huge stills on the right were quickly removed to make room for the new-process cracking coils shown above."

A picture of a man at the wheel of a gate valve is described: "No last drops. The outlet control on every 'Standard' refinery storage tank is raised well above the ground to prevent the last few gallons in the tank from reaching your motor.

"Acres and acres of giant-sized cracking coils—running at full speed to give a higher yield of better, purer gasoline from the same amount of charging stocks," reads the text with a picture of the cracking unit.

SALESMANSHIP—

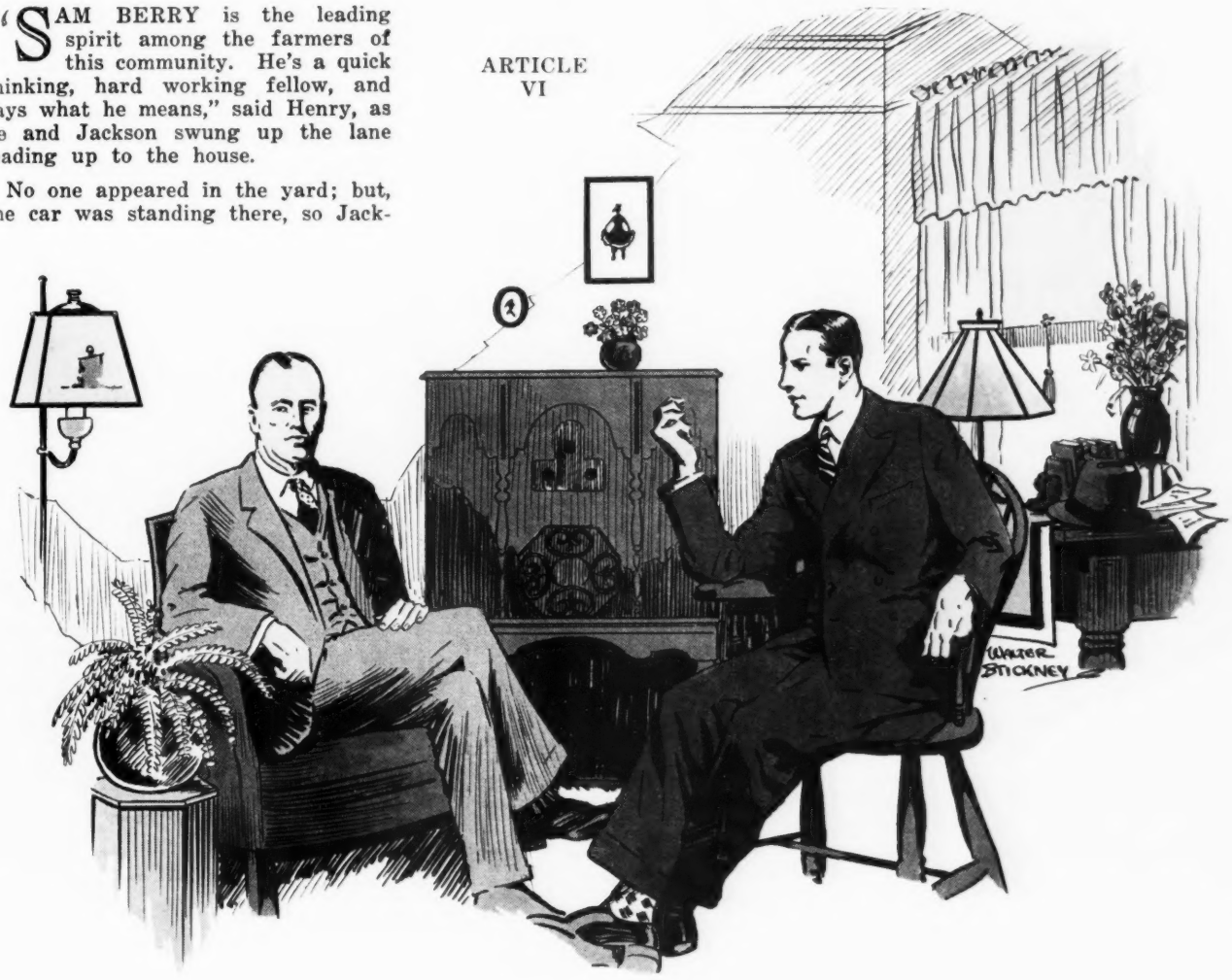
Disarm Customer First, Make a Friend Of Him Before Soliciting His Business

By R. H. Thomas*

ARTICLE VI

"SAM BERRY is the leading spirit among the farmers of this community. He's a quick thinking, hard working fellow, and says what he means," said Henry, as he and Jackson swung up the lane leading up to the house.

No one appeared in the yard; but, the car was standing there, so Jackson went to the door, rapped, and was met by Mrs. Berry.



"This is Mrs. Berry, I believe," he remarked.

"It is," replied Mrs. Berry.

"I am Mr. Jackson," he continued, "and if Mr. Berry is in the house I would like to step in to speak with him on a matter of importance."

"Mr. Berry is busy cleaning up a bit before leaving for town," answered Mrs. Berry.

"Very well, then—with your permission, I'll just step in and take a chair until he has finished cleaning up. I'd wait to see him in town but I have quite a drive ahead of me and I know I can save quite a little time by seeing him here," remarked Jackson, as he wiped off the soles of his shoes preparatory to entering.

"I'll go and—Well I presume that will be all right," said Mrs. Berry as she stepped aside to let him in. "You may take this chair," she suggested, as they reached the front room. Then she went to tell Mr. Berry that a Mr. Jackson was waiting to see him on an important matter.

Soon Mr. Berry walked into the room looking rather suspiciously. Jackson arose, extended his hand, and said—"Mr. Berry, Jackson is my name. I am employed by the Service Oil Co. One of these days soon, there is to be a conference of the company's representatives at headquarters for the purpose of discussing business problems—and particularly the status of the agricultural situation. If something unforseen does not occur, I am to be at that meeting. Now, Mr. Berry, from what I have been

*Author of "Merchandising of Petroleum Products."

REPCAL METAPUMP
Metered Gear Grease Dispenser

Complies with Specifications and Tolerances adopted by National Conference on Weights and Measures

MODEL No. 25
Complete as Shown

$11.75

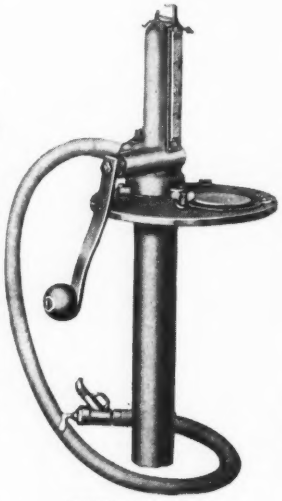
F. O. B. Los Angeles

A new invention of an accurate metered pump that cannot by-pass. Requires but one initial priming.

Safeguard your future equipment investment against OBSOLESCENCE.

A confidence builder with the grease buyer and a time saver for the operator.

Special discounts to the oil companies in quantities.



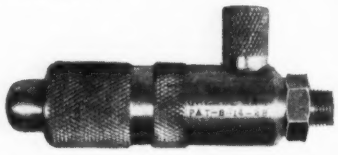
MODEL No. 100
Fits 100 lb. Grease Drum

SHIPPING Weight
Both Models 27 lbs.

REPCAL GREASE RAM

For opening frozen lubricating connections, develops 90,000 lbs. pressure under 100 lb. hammer blow. Saves operator's time—saves expensive hose breakage—guarantees 100% lubrication job.

Set includes one complete ram, also right angle and ¼-inch connections.



Price Complete

$3.25

F. O. B. Los Angeles

Threaded connections are replaceable. Piston is protected by steel piston pad. Adapter permits use of ram as grease nozzle.

Write for particulars

Attractive proposition to Distributors

REPCAL BRASS MFG. CO.

Lubricating Equipment Division

2109-15 E. 27th St. Los Angeles

HIGH GRADE PETROLEUM PRODUCTS

Made by the Oldest Pennsylvania Oil Refiners

CYLINDER STOCKS, (Filtered and Unfiltered).
MOTOR OILS—to match any specification.
High Grade Burning Oils.
300° Mineral Seal and Railroad Oils.
High Grade Transformer Oils.

A. D. MILLER SONS' COMPANY
PITTSBURGH, PA.

able to learn about you, I believe you to be among the most successful and progressive farmers in our territory. That's why I came out here to your own home, to ask you to give me your outlook on the matter."

"Sit down, Mr. Jackson," was Berry's cordial command. "Now I just can't figure out why you should come to me on a matter of that kind. I do no business with your company. Either of the bankers or business men in Piedmont could give you a much more comprehensive view of the situation than I am able to."

"You are too modest, Mr. Berry. Bankers, and other business men, are generally capable in their own line; but, they don't know or understand farm problems as well as they are known and understood by intelligent, well educated agriculturists who make a specialty of operating their own farms. I am sure that if you were not so modest, you would agree with that statement."

This short bundle of carefully thought out words, tactfully expressed by Jackson, completely "thawed" Berry out. He felt honored as his pride got the best of him.

JACKSON continued to lead in the interview and called into play all the resourcefulness and tact at his command. Leading questions, and favorable comment upon the answers made, soon resulted in an interesting discussion of the farm problem which proved highly educational to both of the men—and created an atmosphere of friendliness. Not one word was spoken about the Service Oil Co., its products, or the slightest intimation given regarding the solicitation of business to follow.

After Berry had given his views on business in general, and the agricultural situation in particular, for 20 or 30 minutes, Jackson arose from his chair and said, "My gracious, Mr. Berry, I mustn't detain you longer. Your wife told me that you were getting ready to go to town.

"I don't know when I have called on a man and got more real information or enjoyed the interview more than right here in your home. I am very grateful to you." As he said this he again extended his hand; but, Berry told him that he need be in no hurry as the little business he had to attend to in town was of minor importance and that there was no rush about it.

"By the way, Mr. Berry, said Jackson—as though what he had on his mind was an after thought—did I understand you to say that you did no business with the Service Oil Co.?"

"That is correct," came the reply.

"Well, if it's not asking too much, will you be so kind as to tell me why you discontinued doing business with

us. I was quite positive that I had often seen your name listed among our good customers. What happened? Did Mr. Biesman fall down in giving service?"

"No, I cannot say that," was Berry's reply—and then he continued, "This spring I bought a new tractor. It gave a little trouble for a while and I felt compelled to get a service man out here to either make it operate successfully or take it back.

"HE FINALLY got it going all right; but, while on the job he asked me what oil I was using. I told him it was your heavy tractor oil. When I told him this, he nearly threw a fit. I asked him what was wrong with it, and he told me that it was nothing but a cheap oil made from Mid-Continent crude—that it was low in flash, and gravity, and thinned down quickly in a heavy duty engine.

"He said the use of this oil caused excessive contact of frictional surfaces, resulting in rapid wear of moving parts due to insufficient lubrication. I was impressed with the fact that I had too much invested to buy anything but the best—a good grade of Eastern oil."

"Naturally, you believed him, didn't you Mr. Berry?"

"Well, yes I did. I thought he ought to know what he was talking about inasmuch as making tractors operate successfully was his business," answered Berry.

"Since you have told me that you are in no particular rush to get to town, I'll just take a few minutes to tell you something about lubricating oil that I am sure you will be as appreciative of knowing as I am to possess the information you just gave me about the agricultural situation.

"Mid-Continent crude is lower in price than crude produced in the Pennsylvania fields. Not because it is of poor quality; but, because each barrel of Pennsylvania crude is higher in lubricating oil content.

"I noticed Holstein cows in your yard. If I am properly informed, a Jersey cow will yield much more butter-fat in her whole milk than will a Holstein. However, the Holstein cow, as I understand it, gives more milk than the Jersey. Is that correct, Mr. Berry?"

"That is absolutely correct, Mr. Jackson."

"All right. I am sure that you would not contend for a moment that butter made from Holstein butter-fat was inferior to butter made from Jersey butter-fat, would you?"

"Of course, not," answered Berry.

"Again—if you were buying whole milk by the barrel and you knew that one barrel contained six per cent of butter-fat while another contained but three per cent—which would be the cheapest to make butter out of, even though you had to pay fifty per cent more for your choice?" asked Jackson.

"The one containing the six per cent of butter-fat," answered Berry.

"Exactly," continued Jackson, "A good butter maker will produce excellent butter from Holstein or Jersey butter-fat; but, a poor butter maker will not produce good butter from either.

"The same thing holds in making lubricating oil. The Pennsylvania oil fields are very low, by comparison, in their yield of crude oil; but, they are high in percentage of lubricating stock to be recovered from each barrel produced. On the other hand, Mid-Continent fields have a high average yield of crude per well; but a lower percentage of lubricating stock per barrel than the Eastern field just referred to.

"It is as absurd to say that lubricating oil produced from Mid-Continent crude is of poor quality as it is to say that butter made from Holstein butter-fat is of poor quality; or, that a $20 gold piece made from ore running $4.20 to the ton is of poorer quality than one made from ore running $40 to the ton.

"When a high class butter maker puts his butter on the market, you can forget the stock producing the butter-fat. When Uncle Sam hands you a $20 gold piece you don't worry about the amount of gold that came from each ton of ore in the mine.

"WHEN it comes to lubricating oil—the same thing holds true. A lubricant put out by any good reliable firm will do exactly what it is supposed to do. No company is going to jeopardize its reputation by putting out inferior products—or by trying to pull the wool over the peoples' eyes.

"The oil you are using right now, is without question, a fine lubricant; but, for the lubrication of your tractor it is not one bit better than the Heavy Tractor oil we had been supplying you with. However, the probabilities are you are paying a lot more for it.

"Now, Mr. Berry, doesn't what I have been telling you sound like common sense? Doesn't it rather amuse you to think of some $150 mechanic—or say $250 mechanic, if you want to—coming out here and trying to tell you that a great organization like the Service Oil Co.—or any of the other great concerns in this business—are putting out merchandise of poor quality. Just think of its investments! You know why it employs the best chemists and research engineers that money can hire. It even gives these men stock in the company to insure their interest in the concern, and to foster a craving desire to turn out *QUALITY!* Quality will hold customers, who in turn tell their friends about it, resulting in more business and more profit to those who do their work well. Isn't that right Mr. Berry?"

"What you say certainly sounds reasonable; but, of course, the oil business is not my business—so I just took that man at his word," answered Mr. Berry.

"I UNDERSTAND," said Jackson, as he continued, "I believe you told me this mechanic referred to our oil having a low flash and gravity. Believe me, Mr. Berry, when I tell you that tractor oil put out by any of the real refiners today, has a much higher temperature resistance than will be encountered under actual operating conditions. With reference to the gravity: all that indicates is the relative weight of the oil as compared with distilled water at a temperature of 60 degrees Fahrenheit at sea level. By such a comparison Fatty Arbuckle should be a much greater man than Napoleon; or Tom Thumb should have been a much greater statesman than Benjamin Franklin—because he weighed less. —Ridiculous!

"Any oil will thin down in use as the heavy ends of the gasoline or kerosene come in contact with the lubricating oil on the walls of the cylinders. Of course, the lubricating oil will become diluted; and some of this oil and gasoline mixture is bound to find its way past the pistons and into the crank-case. In time the crank-case oil will become so thin that to continue the use of it may cause serious damage to the tractor. That's why you are told to drain the crank-case at regular intervals.

"Many people advocate the use of an expensive oil. They say, 'run it 'en add what is needed from time to time.' It's so good you seldom need drain the crank-case, they say. They forget that every time the pistons come down on the suction strokes, they draw in through the manifold—not gasoline or kerosene alone properly mixed with air—but, air which is always impregnated to a greater or lesser extent with fine particles of dust and dirt that find their way to the cylinder walls to mix with the lubricating oil. This will in time become more of a grinding compound than a friction reducer unless it is changed.

"If the oil a man uses does not thin down, he should change it at reasonable intervals nevertheless—because, it costs more money to use dirty oil than it does to use thin oil, just as it costs more to use a dull plow lay than to sharpen and change occasionally."

"I believe you are right about that, Mr. Jackson," admitted Berry.

~~~ Wayne ~~~

Wayne Model 615, Wet Hose, Visible Pump is the choice of hundreds of Oil Companies for their standard equipment. Speedy operation, dependability and low maintenance cost are factors accounting for its nation-wide popularity. There is a sales office and warehouse near you. Send for literature and prices.

WAYNE COMPANY
FORT WAYNE, INDIANA

Atlantic Area
FRY EQUIPMENT CORP. DIVISION
Rochester, Pennsylvania

WAYNE COMPANY, LTD.,
Toronto, Canada

Pacific Area
THE BOYLE-DAYTON DIVISION
Los Angeles, California

"You have opened my eyes on the oil subject, I'll admit.

"This mechanic told me that it was much safer to use oil from a pure stock which contained paraffine wax, like is used for sealing jams and jellies, than an oil coming from a part of the country where the crude oil was only fit for making road oils, roofing materials, and cracked gasoline."

"That's another good joke," said Jackson. "When lubricating oil is finished, it has the same amount of wax or asphalt in it as there is of eggs in chicken stew, or of limburger cheese in skim milk.

"In the process of refining every thing is taken out that will detract from the lubricating properties of the oil; and all of the properties that will promote the lubricating efficiency of the oil are most carefully conserved in the oil.

"Mr. Berry, you do not realize just how much personal satisfaction it would afford me to again be privileged to count you among our friends and customers. It certainly hurts my pride to think of a man of your standing and reputation in this community —not using our quality merchandise just because some well meaning fellow misinformed you about them.

"I DON'T believe that man ever intended to lie to you. He simply did not know—that's all! Now, Mr. Berry, I'll just tell you since I am here what our proposition on oil is. The price of the Heavy Tractor oil has not changed since some time last December; but, I am in position at this time to put you down for three half barrels of this oil at the price in effect today—and to guarantee that price for a year.

"The oil will be delivered to your place, a half barrel at a time, by Mr. Biesman, our agent here at Piedmont; but, in the event the price be reduced at any time between now and a year from now—you will only be asked to pay the market price in effect at the time the oil is delivered to you. In other words you are protected both ways. I am sure that if I offered to contract for your corn at $1 a bushel—and that this was guaranteed as a minimum price—you would give me a signed contract if I also guaranteed to pay you the market price in the event it advanced to $1.50 by the time you were to deliver it."

"Well, Mr. Jackson, I'd like to use your stuff all right but I fear that dealer would not stand behind his guarantee of the tractor if I should disregard the instructions given by his service man."

"Don't worry about that, Mr. Berry," said Jackson, "In the first place the company who manufactured the tractor is the one who puts out

The OHMER Cash Register is so small you can install it almost anywhere. You can place the cash drawer under the counter if you want to, as shown in the picture.

Complete control for less money!

Business demands that everything must pay its own way. Then how can anyone justify needless expenditure for a complicated system of business control?

It is no longer necessary, for here is a truly simple cash register. It gives *complete* information and *complete* protection. Yet it costs but a fraction of what you would expect to pay.

Consider what this means. It means that a large, bulky cash register is now obsolete. It means that, for the first time, you can buy a complete system of business control at an amazingly low price.

And the OHMER Cash Register does *more* than save money on the first cost. Its small size saves valuable display space. Its pre-indicating feature prevents costly mistakes. Its complete record saves time in keeping accounts.

Get full information

Learn all about the OHMER Cash Register. Find out what it will do for *you*. Stop in at our display room or telephone for a representative to call. Do this *today*.

THE OHMER FARE REGISTER CO.
Dayton, Ohio, U.S.A.

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CASH REGISTERS

This is a series of receipts with corresponding detail strip from the OHMER Cash Register. Here you have a complete accounting system by means of the simplest, speediest and the most compact cash register ever built.

Factory Branches at

Atlanta	Minneapolis
Boston	New York
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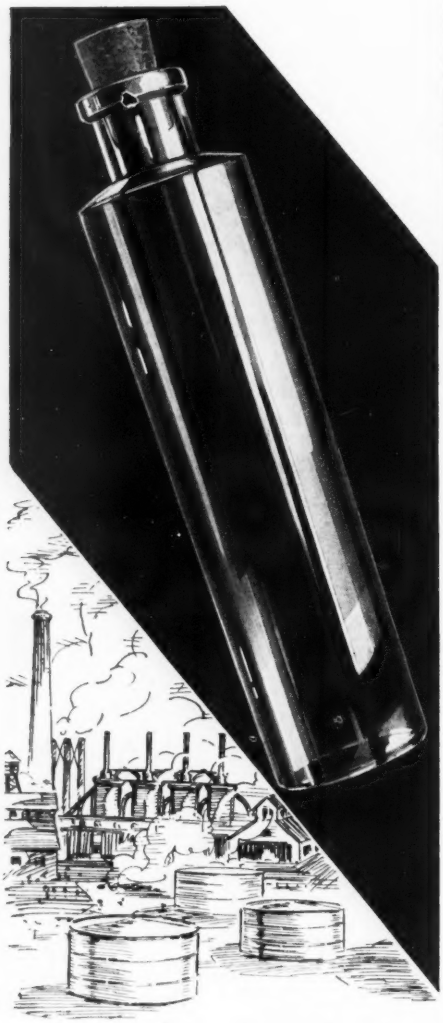
Sales and Service in Principal Cities

Oil Samples make Sales



~in these clear, brilliant bottles

Your product is your best salesman, so make sure that it is dressed in the best possible way. Owens-Illinois sample oil bottles are hand-blown of the finest perfume-bottle glass to give the maximum in beauty and display.

Special attention is given to the necks of these beautiful bottles. They permit of perfect and uniform corkage.

For a slight extra charge you may have your trade-mark blown on each bottle. Obtainable in 2, 4 or 8 oz. sizes. Samples gladly sent upon request. Owens-Illinois Glass Company, Toledo, Ohio.

OWENS-ILLINOIS
BOTTLES

the guarantees—not the dealer who talks as though he was the whole tractor company. In the second place, whose guarantee would you rather have—that of some $10,000 or $20,000 dealer, or the guarantee of a $50,000,000 oil company? You know that the Service Oil Co. guarantees the products they manufacture and sell.

"There are hundreds of tractors just like yours being lubricated every day with our Heavy Tractor oil—and it will give you the ideal service it is giving them, too. So unless you positively insist that I must not do it, I am going to tell Henry Biesman, our agent, to put you down for three half barrels of that oil to be delivered by him here on the farm at dates which are satisfactory to you.

"When do you think you will need the first half barrel, Mr. Berry?"

"Well, I guess not for a while anyway," answered Berry.

"That will be fine," Jackson remarked. "Let's just step out and tell Mr. Biesman about it so he will get the thing straight."

Both men went out of doors as Jackson enthusiastically led the way. When he and Berry reached the car, Jackson said—"Henry, you know Mr. Berry, don't you?"

"Certainly," came the quick reply.

"Mr. Berry just told me that he wanted to get fixed up on lubricating oil for the year, so if you will just hand me that order book, we'll have it all fixed up in a minute," said Jackson.

Henry, reached in his pocket and got his own order book and handed it to Jackson, who immediately put down three half barrels of Heavy Tractor oil, and the price per gallon.

He then entered the half barrel containers at $2.25 each, and explained to Mr. Berry that full credit would be allowed for the return of the barrels in good conditions. He explained that unless containers were charged to customers the company would soon lose track of their packages, etc.

Jackson then handed the order book over to Mr. Berry and suggested—"You sign this top line at the bottom of the page, please, so I may leave a copy with you. I always like to leave a copy so that the customer may file it for future reference."

Mr. Berry signed the order and handed the order book and pencil back to Mr. Jackson.

Jackson raised the original order between his thumb and forefinger as though preparing to tear out the copy underneath, when he stopped short—looked at Mr. Berry and said,

"I forgot all about your requirements of grease, etc. Surely you will need a 25 pound tin of tractor grease, some belt dressing, and harness oil. Therefore, I better just add that to the order, hadn't I?"

"Well, I guess I'll need some tractor grease all right."

"I am just wondering if 25 pounds will be enough for the season," said Jackson. "If not you just tell me what you think your requirements will be," he added.

"I think I ought to get at least 50 pounds," was Berry's suggestion.

"Very well—and inasmuch as you use your tractor for threshing and other belt work, it will be the part of wisdom to allow me to put you down for a 10 pound tin of that liquid belt dressing too—as well as a five gallon can of harness oil to preserve the high priced leather of which they are made—don't you think so, Mr. Berry?"

"Oh, I guess perhaps that will be all right. I presume I will be able to use it," consented Berry.

So Jackson added these items to the order. He then asked when it would be desirable to deliver the first half barrel of oil, and found that—"most any time next week will be satisfactory."

He then said to Mr. Berry, "When Henry here delivers that oil to you I hope you will find it convenient to allow him to fill your kerosene and gasoline barrels too."

"Well, I guess you won't need to worry about that now," answered Mr. Berry, with a friendly smile on his face.

"Henry and I are going to get along fine, I'm sure," was his parting remark as he bade Jackson and Henry good morning and walked into the house with the copy of the order he had just given.

Notary Public Truck Driver Improves Collections

CRAWFORDSVILLE, Ind.—Clarence Snyder, bulk station agent of Geo. W. Deer & Son at Hillsboro, Ind., is a notary public and this office helps him collect promptly from farmer customers so they can obtain a refund on the state gasoline tax money paid.

The notary public sign is carried on his truck. He carries his seal and refund application blanks. When a farmer pays for his gasoline Mr. Snyder can make out the affidavit and notarize it. There is no charge for this service.

This service is carried farther, to notarizing affidavits of purchases from other oil companies, a service that the farmers appreciate.

ON THE LAZY BENCH

National Petroleum News

Deliberate

English Magistrate—Could the motorist have avoided hitting you?

Plaintiff—Ay, 'e could, your worship. 'E 'ad the choice of 'itting me or the missus an' 'e picked me.

—*The Vent*

* * *

"Your Majesty, a woman waits without."

"Without what, you Knave?"

"Without speaking."

"Show her in. She's the ideal I've been waiting for."

—*Field Flashes*

* * *

Applicant—And if I take the job am I to get a raise in salary every year?

Employer—Yes; provided, of course, that your work is satisfactory.

Applicant—Ah, I thought there was a catch in it somewhere!

—*Standard Oil Bulletin*

* * *

Prof: "Can you prove that the square of the hypotenuse is equal to the sum of the squares of the two sides of this triangle?"

Stude: "I don't have to prove it; I admit it."

—*Magnolia Oil News*

* * *

If You Believe in Signs

Sign in bathroom in the corner boarding house:

PLEASE CLEAN TUB
AFTER BATHING
LANDLADY

—*Mid-Continent Petroleum Courier*

* * *

"What's a bacteria?"

"That's the rear door to a cafeteria."

—*Magnolia Oil News*

* * *

Knew the Commands

She was only a drill sergeant's daughter, but she knew when to call a halt.

—*Mid-Continent Petroleum Courier*

* * *

"Daddy, what is dew?" asked Bobby.

"The rent, the note at the bank, and the installment on my car," growled his dad.

—*Magnolia Oil News*

* * *

Speaking Freely

Mae: Whassa matter, Floe?

Floe: Gawd, Mae. Never go out with a chiropractor.

—*Mid-Continent Petroleum Courier*

* * *

"I guess we'll make port," said the sailor as he threw in another handful of raisins.

—*Magnolia Oil News*

Famous Oil Field Sayings

Farm Boss—"Let's get it done, boys."

Rockhound—"Well, I just can't say."

Teamster—"Whoa, got any drinking water?"

Roustabout—"What time is it?"

Tool Pusher—"Where's the farm boss?"

Caser—"Got any soft rope?"

Land Man—"No, you're a little too high."

Pumper—"I just came from there."

Roughneck—"That'll get the job done."

Cable Driller—"Hard and muddy."

Scout—"How deep are you?"

Fireman—"We're a little low on gas."

Tool Dresser—"Only a little while now till twelve o'clock."

Rotary Driller—"Shale and shells."

—By Luke B. Dodds, Sasakwa, Oklahoma.

—*Mid-Continent Petroleum Courier*

* * *

"What is it?" asked the doctor who had been hurriedly summoned at midnight. "Nothing this time, Doc," answered Newlywed, looking at his watch, "My wife just wanted to see how soon you could get here in case the baby was suddenly taken ill."

—*Standard Oil Bulletin*

* * *

He: "Gee, I'm only a little pebble in your life."

She: "Then why don't you become a little boulder?"

—*Doherty News*

* * *

Be Pachunt

"Dear Sir: I got your bill what I owe you. I ain't forgot you, plese wate. When some other fools pay me I pay you. If this wuz judgment day and you wuz no more prepared to meet yur maker as I am this account you sure would go to hell. Hoping you will do this, I remain your very truly."

—*Mid-Continent Petroleum Courier*

* * *

"Is he a good driver?"

"Well, when the road turns the same time he does it's just a coincidence."

—*Magnolia Oil News*

* * *

Don't Tell

"Can you keep a secret daddy?"

"Yes, Junior, what is it?"

"Well, mamma just ran off with the chauffeur and they've taken the Cadillac."

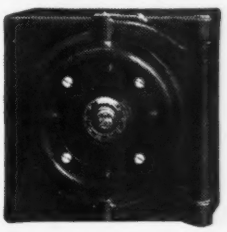
—*Mid-Continent Petroleum Courier*

Another Filling Station Raided!

A SHORT "joy ride" from a nearby city—a quick attack upon your filling station, and the thieves return to their haunts well supplied with cash.

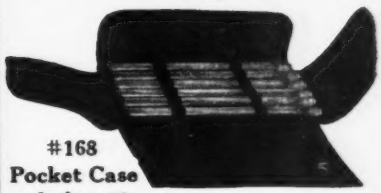
Only the best protection obtainable—the York Round Door Chest—is good enough to resist the stubborn attacks of these cracksmen.

Follow the lead of the largest chains of filling stations—install York Round Door Chests.



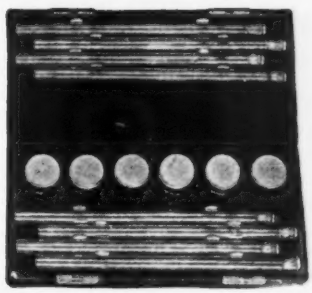
YORK SAFE and LOCK COMPANY
YORK, PA.

Pocket Sample Cases



#168 Pocket Case only $4.00

Sturdily constructed from black cobra grain cowhide. Lined with red plush. Contains six bottles. 9"x1½".



175—This case contains eight 9-inch bottles and six grease jars. Made from black cobra grain cowhide, lined with red plush. Has two serviceable nickel slide catches, price including metal capped corks, only $7.00

Less 10% for Cash

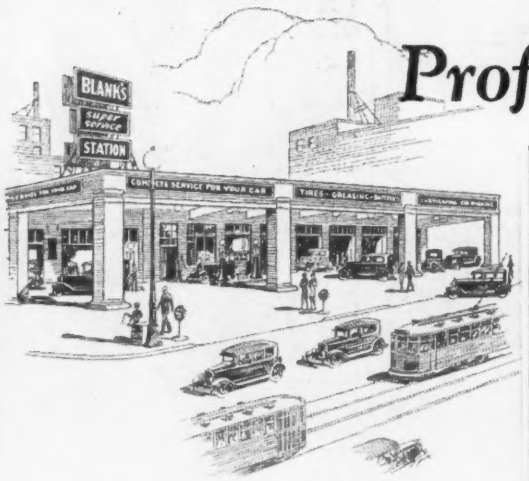
Other styles in our FREE Catalog

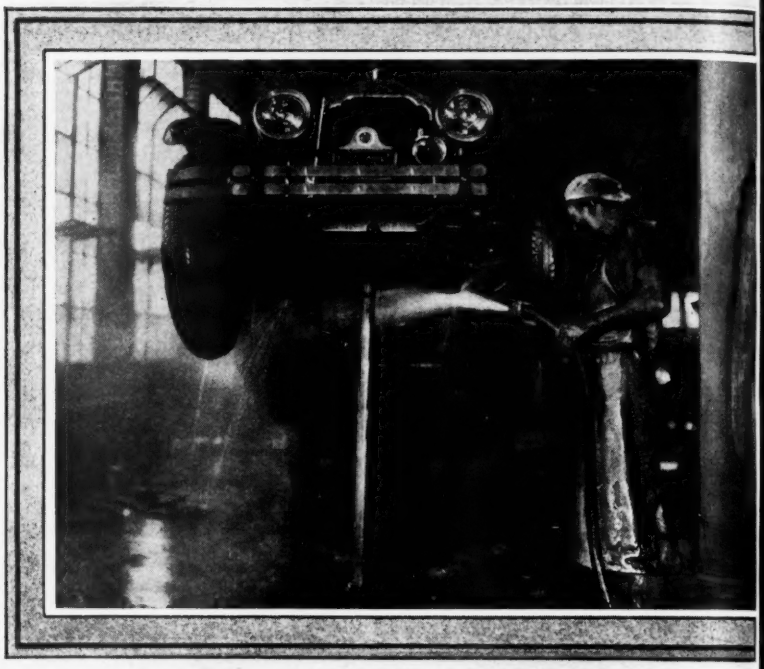
L-U-C-E

Builders of Sales Luggage

614 Delaware Kansas City, Mo.

Profits 4⅓ times as large as





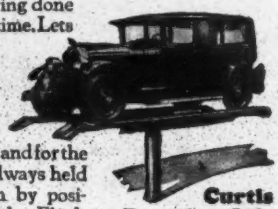
Curtis Front End Lift

CURTIS
75th Anniversary Line

Curtis Compressed Air Washer not only washes more cars cleaner than any other power washer, but renders a complete cleaning service. Operates cleaning attachments and pneumatic tools, furnishes air for tire inflation, etc. New features are: Timken equipped Curtis duplex compressor; more compact mounting; reduced weight.

New TIMKEN equipped Curtis Compressed Air Washer

Curtis Automobile Lift increases your profits because it [1] attracts customers, [2] cuts time-cost. Inspecting, lubricating and repairing done in half the time. Lets the customer see the work. This is the *safe* lift for you and for the car. Lift always held in position by positive oil lock. Flush stuffing box design; no pits or recesses. Choice of roll-on or free wheel type.



Curtis Rotating Lift
Licensed under Lunati patents.

New TIMKEN equipped CURTIS Compressor

Curtis Compressor has Timken tapered roller bearings. Automobile type "V" belt drive [up to 2 H. P. incl.] Universal motor mounting. All steel base. Improved "Centro-Ring" oiling system. Painted attractively in red and black.

Curtis Air Stands—Reel and Tower types with or without water attachments. **Curtis Air Stands**

Nowadays, because people prefer service where they can get *everything done at one place*, stations offering complete service are cornering patronage.

To compete successfully, one of the important parts of the complete service a station must offer is *car washing*. Happily, car washing now can be made really profitable. Power equipment making it *expert*, more jobs are brought in—making it *rapid*, each job pays a larger profit. A Nielsen Survey shows one station making *61c more profit per car* than with hand washing.

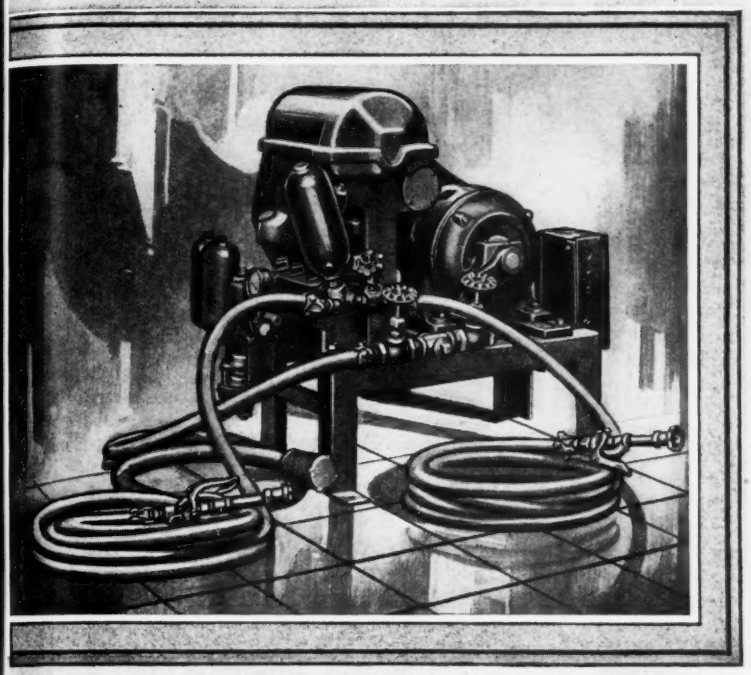
Curtis makes both the Curtis *Hydraulic* Car Washer and the Curtis *Compressed Air* Washer—and therefore can make unbiased recommendation. The design of both is the result of the thought and experimentation carried on during the 12 years since Curtis originated the power car washer. Over 75 years of engineering and manufacturing is behind their construction.

CURTIS

The superiority in design and manufacture of Curtis Car Washers, Auto Lifts, Timken Bearing Compressors, etc., are subject to such thorough demonstrations and proof that sound business judgement should induce anyone interested in such products to get in touch with the Curtis organization or its representatives, before purchasing.

TIMKEN BEARING EQUIPPED

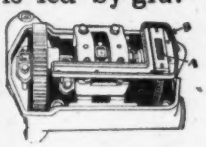
with hand washing



Curtis Hydraulic Washer

The Curtis hydraulic car washer is a low priced unit for the station already having or not requiring the additional compressed air facilities of the Curtis Air Washer. Every part is Curtis-designed and Curtis-built. The pump is not just a ready-made unit but is designed and built by Curtis especially for car washing use. It is a slow speed, enclosed, 3 cylinder pump free from that jerky action so noticeable in 1 or 2 cylinder pumps running at higher speeds.

The pump does not require frequent oiling nor depend upon grease cups which careless operators may neglect. An endless chain (A) running over the sheave on the crankshaft carries oil to a felt lined pan (B) from where it is fed by gravity, constantly drenching each friction point. Thus the complete machine is lubricated for 60 to 90 days without attention.



St. Louis

Curtis Pneumatic Mchy. Co.
1965 Kienlen Ave., St. Louis—518X Hudson Term., N. Y.

Please send catalog and information about [State product you are interested in]

*Name*_____

*Address*_____

New Stations Building

Note: Material used in this column is principally taken from the newspapers. NATIONAL PETROLEUM NEWS assumes no responsibility for its accuracy.

The list as published from week to week cannot be looked upon as indicative of the relative extent to which stations are being built in various parts of the country.

Jeffersonville, Ind.—Stoll Oil Refining Co., filling station.
Glen Falls, N. Y.—Alexander Bros. and Kenneth Bennett, filling station.
Minneapolis, Minn.—Victor Lillyquist, bulk station.
Ridgewood, N. J.—Joseph E. Mirandon, Inc., service station.
Heron, Lake, Minn.—Lokker Bros., filling station.
McAlester, Okla.—Templeton Tire & Battery Co., service station.
Bucyrus, O.—The Texas Co., filling station.
Ava, Mo.—J. R. Spurlock, filling station.
Zanesville, O.—Guy Crumbaker, filling station.
Ft. Smith, Ark.—Mid-Continent Petroleum Corp., filling station.
Glen Elder, Kan.—E. W. Norris, service station.
Ladysmith, Wis.—Wisconsin Northern Oil Co., filling station.
Winona, Minn.—Shell Petroleum Corp., bulk station.
Eau Claire, Wis.—Conley Oil Co., filling station.
Elroy, Wis.—John J. Wegner, filling station.
Mason City, Ia.—Highway Oil Co., service station.

Oil Trademarks For Copyright

The following are trademark applications pertinent to our field pending in the United States Patent office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Mark Company, Barrister Building, Washington, D. C. trade-mark specialists.

As an additional service feature to its readers, this journal gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering. You may communicate with the Editor of this Department, or send your inquiry direct to the National Trade-Mark Company, stating that you are a reader of this journal.

"TEXAS GASOLINE, FLYING" (this expression is accompanied with the representation of a red six pointed star with the picture of an eagle with out-spread wings thereon.) No. 283,054. Ben Rabinowitz, Dallas, Texas. For gasoline, lubricating oils and greases.

"GENERAL" No. 286,240. General Petroleum Corp. of California, Los Angeles, Calif. For petroleum products for burning, lubricating, etc.

"HOLLY WOOD" No. 286,429. Gilmore Oil Co., Los Angeles, Calif. For lubricating oils and greases, gasoline, kerosene, etc.

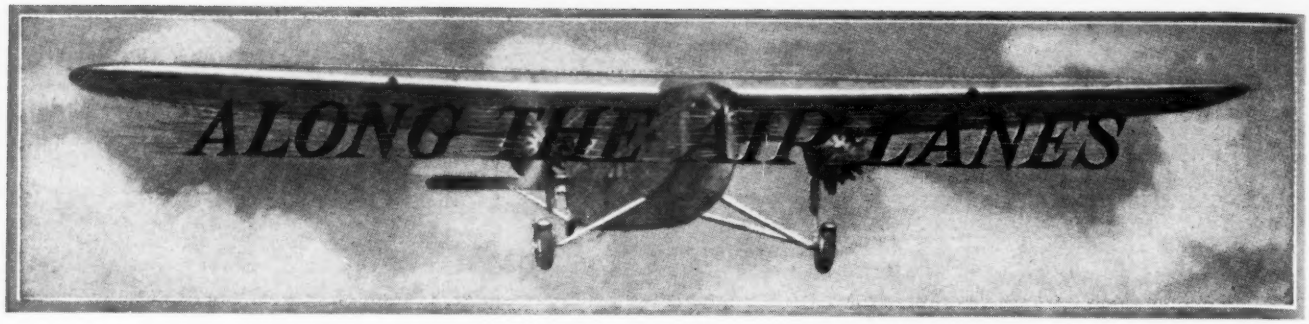
"PENN-VIS" No. 287,422. Pennant Oil & Grease Co., Inc., Los Angeles, Calif. For lubricating oils and greases.

"DACOLENE" No. 288,319. Dacotah Oil Co., Jamestown, N. Dak. For gasoline, kerosene, lubricating oils and greases.

"PYROIL" No. 288,344. Wm. V. Kidder, La Crosse, Wis. For motor oils or lubricants.

"SPARTAN" No. 288,400. Standard Oil Co. of Pennsylvania, Philadelphia, Pa. For oils for illuminating, burning, power, fuel, and lubricating purposes.

"HELION" No. 285,762. Will & Baumer Candle Co., Inc., Syracuse, N. Y. For candles.



THE National Air Tour, completed Oct. 21, in which 24 planes competed with 10 or more accompanying craft, brought honorable mention to planes of three oil companies.

For quiet efficiency and reliability maintained throughout the tour, mention was given to the Standard Oil Co. of New Jersey "weather ship" plane piloted by Rodney Lamont; to The Texas Co.'s Lockheed, flown by Capt. Frank M. Hawks, manager of that company's aviation department; and to the "Mobiloil Robin" piloted by Roger Q. Williams, of the "flight-to-Rome" fame.

Capt. Hawks was referee of the tour. John Livingston was winner of the tour.

Don H. Hardiman, who represents the Gilbert & Barker Manufacturing Co., with headquarters at San Antonio, is taking up aviation. Mr. Hardiman is spending his spare time at the Texas Air Transport facilities in San Antonio, getting in the necessary hours to qualify as a pilot. Friends credit him with looking forward to the time when he will own and fly his own ship.

Tests in fighting airplane fires were conducted recently by the American-La France & Foamite Corp. at the Utica, N. Y., testing grounds. Two planes were set on fire, one fire to be extinguished by Alfite (carbon dioxide), the other fire to be put out by Firefoam.

To duplicate fire conditions in flight planes, when the gasoline tank usually is ruptured, 20 to 30 gallons of gasoline and three gallons of motor oil were poured on the planes and on the ground.

Conclusions from these tests were, according to American-La France company, that while Alfite gas might in some cases be sufficient to extinguish a particular airplane fire, Firefoam is the better extinguishing medium when considered from every angle. These tests were conducted in co-operation with the Canadian Department of National Defense.

A new $100,000 airport has been installed at Chanute, Kan., according to A. R. Stueck, manager of the A-R-S Lubricant Co., Chanute. The airport operates 24 hours a day. The town also has a new $350,000 hotel.

That an up-to-date aviation department is becoming a necessity rather than a luxury, paralleling the present-day viewpoint of the automobile, seems more and more apparent as one oil company after another falls in line and installs such a department.

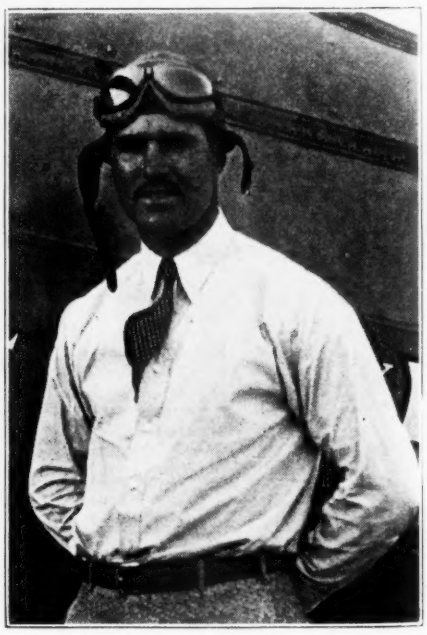
Under the supervision of Emory B. Bronte, senior lieutenant in the U. S. Naval Aviation Reserve, who accompanied Ernest L. Smith on the first civilian flight from California to Hawaii, the aviation department of the Associated Oil Co., San Francisco, has become one of the most extensive in the oil industry.

A specially built Boeing plane was recently purchased by that company for the use of the sales department and to assist the promotion of aviation by conducting tests of lubricating oils and fuels under actual operating conditions. In addition to this, the company is offering the facilities of its research and motor-testing laboratories to airplane and engine manufacturers. These laboratories are under the supervision of men trained in air service.

This plane is a biplane, with a wing span of 44 feet and a fuselage length of 33 feet. It is powered with a 425 h.p. "Wasp" engine.

Don H. Hardiman

Miss Dorris E. Williams, first aviatrix of The Texas Co. She is employed in the producing department at Wichita Falls, and recounts in the October issue of "The Texaco Star" some of the trials and tribulations that beset the embryo aviator



Emory B. Bronte

Daily Average Crude Oil Production and Imports

Daily average gross output of United States, by fields, for week ending with dates below as compiled by American Petroleum Institute

PRODUCTION SUMMARY

	Nov. 23	Nov. 16
Production east of Rockies	1,933,750	1,945,500
Decrease		11,750
Total production in U. S.	2,633,250	2,620,000
Increase		13,250
Crude oil imports	258,300	286,429
Decrease		28,129
Total crude supply	2,891,550	2,906,429
Decrease		14,879

OKLAHOMA

	Nov. 23	Nov. 16
Allen Dome	20,600	20,300
Asher	4,350	4,600
Blackwell	3,750	3,750
Bowlegs	25,550	26,000
Braman	3,700	3,700
Bristow-Slick	18,700	19,000
Burbank	17,650	17,700
Carr City	10,100	10,400
Cromwell	7,600	7,600
Cushing	15,700	15,000
Davenport	1,300	1,300
Duncan District	8,500	8,400
Earlsboro	61,450	64,000
East Seminole	4,500	4,250
Fox	1,300	1,300
Garber	4,900	4,800
Graham	3,900	3,900
Healdton	12,650	12,650
Hewitt	7,850	7,800
Hubbard	1,700	1,700
Little River	67,600	70,700
Logan County	15,650	15,850
Maud	9,000	9,800
Mission	15,800	16,900
North Okmulgee	11,250	11,300
Oklahoma City	64,200	57,750
Osage (outside Burbank)	26,750	26,550
Papoose	3,200	3,200
Pearson	850	950
St. Louis	51,850	49,400
Sasakwa	8,700	11,800
Scholem-Alechem	13,750	13,750
Searight	9,450	10,250
Seminole	25,350	26,400
South Okmulgee	7,000	7,000
Thomas	600	750
Tonkawa	8,800	9,050
Wewoka	4,350	4,350
Yale-Jennings	7,300	6,450
Others	55,850	55,600
Total, Oklahoma	643,050	645,950
Decrease		2,900

KANSAS

Augusta-Fox Bush	3,000	2,950
Churchill	5,400	5,200
Eldorado-Towanda	12,900	13,100
Florence-Covert	1,050	950
Greenwood County	21,450	20,750
Oxford	3,450	3,700
Peabody-Elbing	3,150	3,100
Rainbow Bend	1,150	1,100
Russell	3,200	3,000
Sedgwick County	22,900	22,300
Others	33,000	33,500
Total, Kansas	110,650	109,650
Increase		1,000

NORTH LOUISIANA

Bellevue	650	650
Caddo, light	10,800	10,750
Caddo, heavy	2,900	3,100
Cotton Valley	2,500	2,500
De Soto and Red River	2,900	2,800
Elm Grove	500	500
Haynesville	4,850	4,900
Homer	3,700	3,700
Pleasant Hill	1,400	1,300
Urania	5,550	5,550
Others	700	800
Total, North Louisiana	36,450	36,550
Decrease		100

ARKANSAS

Champagnolle	5,500	5,300
El Dorado	4,300	3,500
Lisbon	1,100	1,150
Nevada	1,050	1,050
Smackover, light	5,800	5,800
Smackover, heavy	45,100	45,350
Stephens	1,000	1,000
Others	100	100
Total, Arkansas	63,950	63,250
Increase		700

TEXAS (Outside Gulf Coast)

Panhandle District

Carson County	9,600	10,000
Gray County	64,400	61,200
Hutchinson County	27,000	27,750
Wheeler County	700	600
Others	900	800
Total, Panhandle Texas	102,600	100,350
Increase		2,250

North Texas

Archer County	18,050	17,950
Burkburnett	9,300	9,150
Electra	11,400	11,250
Iowa Park and K. M. A.	4,650	4,550
Montague-Cooke	15,050	16,200
Wilbarger	29,950	30,600
Others	900	900
Total, North Texas	89,300	90,600
Decrease		1,300

West Central Texas

Brown County	10,600	10,900
Callahan County	3,400	3,400
Coleman County	7,000	8,000
Eastland-Desdemona	6,550	6,600
Jack County	3,700	3,650
Palo Pinto County	550	500
Shackleford County	9,500	9,650
Stephens County	6,300	6,300
Throckmorton County	600	600
Young County	7,200	6,400
Others	1,450	1,500
Total, West Central Texas	56,850	57,500
Decrease		650

West Texas

	Nov. 23	Nov. 16
Crane and Upton Counties	44,000	44,800
Crockett County	2,300	2,400
Howard County	40,000	40,900
Jones County	2,600	2,600
Mitchell and Scurry Counties	2,500	2,600
Pecos County	141,000	143,600
Reagan County	17,000	17,150
Winkler County	105,000	106,400
Others	2,850	2,800
Total, West Texas	357,250	363,250
Decrease		6,000

East Central Texas

	Nov. 23	Nov. 16
Boggy Creek	3,100	3,200
Corsicana-Powell	6,900	7,000
Currie	400	400
Mexia	5,000	5,100
Nigger Creek	350	300
Richland	300	300
Van Zandt	300	300
Wortham	1,000	1,000
Total, East Central Texas	17,350	17,600
Decrease		250

Southwest Texas

Dale	350	400
Laredo District	9,300	9,400
Luling	10,750	10,800
Lytton Springs	900	900
Refugio County	16,200	14,200
Salt Flat	32,800	33,650
Somerset	1,700	1,700
Others	2,650	2,650
Total, Southwest Texas	74,650	73,700
Increase		950
Total, Texas (Outside Gulf Coast)	698,000	703,000
Decrease		5,000

GULF COAST

Coastal Texas

Barbers Hill	20,700	22,350
Batson	1,300	1,300
Big Creek	4,800	5,300
Blue Ridge	2,400	2,400
Boling	1,300	1,300
Damon Mound	500	500
Fannett	1,900	2,800
Goose Creek	5,400	5,650
Hull	10,250	10,400
Humble	18,200	18,200
Orange County	3,250	2,300
Pierce Junction	11,500	11,900
Raccoon Bend	9,000	8,750
Saratoga	900	900
Somerville	1,600	1,500
Sour Lake	2,550	2,500
South Liberty	5,700	5,600
Spindletop	20,600	22,350
Sugarland	13,600	12,650
West Columbia	6,000	6,200
Others	6,900	5,350
Total, Coastal Texas	148,350	150,200
Decrease		1,850

Coastal Louisiana

East Hackberry	1,950	2,050
Edgerly	600	600
Evangeline	1,500	1,550
Lockport	3,700	3,800
Old Hackberry	2,700	2,800
Sorrento Dome		50
Sulphur Dome	6,100	6,400
Vinton	4,400	4,100
Others	2,350	3,600
Total, Coastal Louisiana	23,300	24,950
Decrease		1,650
Total Gulf Coast	171,650	175,150
Decrease		3,500

ROCKY MOUNTAIN

Wyoming

Big Muddy	2,100	2,200
Elk Basin	700	600
Grass Creek	2,000	2,250
Labarge	2,500	2,250
Lance Creek	150	150
Lost Soldier	3,050	3,100
Oregon Basin	4,550	4,800
Rock Creek	2,250	2,300
Salt Creek	30,700	31,250
Others	4,500	3,950
Total, Wyoming	52,500	52,850
Decrease		350

Montana

Cat Creek	1,250	1,250
Pondera	2,400	2,400
Sunburst	6,800	6,900
Others	50	50
Total, Montana	10,500	10,600
Decrease		100

Colorado

Florence	600	700
Fort Collins	1,800	1,850
Moffat (Craig)	1,050	1,200
Others	1,650	1,700
Total, Colorado	5,100	5,450
Decrease		350

New Mexico

Artesia	850	850
Balance Lea & Eddy Counties	4,450	4,450
Hogback	550	500
Rattlesnake	1,650	1,650
Table Mesa	100	100
Others	400	400
Total, New Mexico	8,000	7,950
Increase		50
Total, Rocky Mountain	76,100	76,850
Decrease		750

CALIFORNIA

Dominguez	8,500	8,500
Elwood-Goleta	35,000	28,000
Huntington Beach	42,000	42,000
Inglewood	23,000	23,000
Kettleman Hills	10,000	10,000
Long Beach	108,000	112,000
Midway-Sunset	72,500	72,500
Santa Fe Springs	160,000	150,000
Seal Beach	29,000	22,000
Ventura Avenue	55,000	50,000
Others	156,500	156,500
Total, California	699,500	674,500
Increase		25,000

EASTERN

(Not including Michigan)	118,900	119,000
Decrease		100

MICHIGAN

Mt. Pleasant	7,200	8,100
Muskegon	7,600	7,800
Saginaw	200	200
Total, Michigan	15,000	16,100
Decrease		1,100

Compilation Of Mid-Continent Refinery Operations

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National Petroleum News

Mid-Continent Refinery Operations Week Ended November 22 (By Telegraph)

	Kansas	Oklahoma	North & Cent. Texas	West Texas	North La.-Ark.	Total Week Ended Nov. 22
Plants Reporting.....	12	29	25	15	12	93
Da. Av. Cap. (Bbls.)..	92,000	160,200	86,600	81,500	54,900	475,200
Da. Cracking Capacity	30,700	52,600	17,200	5,000	22,700	128,200
Da. Av. Crude Runs..	58,612 — 1.8	118,926 — 2.5	66,631 — 3.1	34,301 — 5.0	54,743 — 6.0	333,213 — 3.3
Da. Av. Other Oils....	9,086 — 5.4	3,734 — 6.7	1,942 + 10.0	2,629 — 4.9	2,677 — 8.8	20,068 — 4.7
GASOLINE—Gallons						
Stocks, Nov. 15.....	15,051,000	47,562,000	15,522,000	11,948,000	8,289,000	98,372,000
Prod. 11-15 to 11-22..	10,152,000 — 2.1	19,098,000 + 0.9	8,815,000 — 2.9	3,557,000 — 0.4	5,367,000 — 13.9	46,989,000 — 2.5
Ship. 11-15 to 11-22..	8,728,000 + 2.3	18,332,000 + 2.9	8,374,000 — 9.1	3,213,000 — 0.4	5,946,000 — 10.2	44,593,000 — 1.8
Stocks, Nov. 22.....	16,475,000 + 9.4	48,328,000 + 1.6	15,963,000 + 2.8	12,292,000 + 2.9	7,710,000 — 7.0	100,768,000 + 2.4
Ratio Sales to Prod...	86.0%	96.0%	95.0%	90.3%	110.8%	94.9%
KEROSENE—Gallons						
Stocks, Nov. 15.....	12,526,000	7,841,000	2,225,000	37,000	1,417,000	24,046,000
Prod. 11-15 to 11-22..	1,876,000 — 6.5	2,443,000 — 11.2	1,811,000 + 1.5	9,000 — 59.1	418,000 + 14.5	6,557,000 — 5.4
Ship. 11-15 to 11-22..	831,000 — 13.5	1,867,000 — 12.6	1,707,000 — 15.6	15,000 — 28.6	512,000 + 13.8	4,932,000 — 11.8
Stocks, Nov 22.....	13,571,000 + 8.3	8,417,000 + 7.3	2,329,000 + 4.7	31,000 — 16.2	1,323,000 — 6.6	25,671,000 + 6.8
Ratio Sales to Prod...	44.2%	76.4%	94.3%	166.7%	122.5%	75.2%
STOVE DISTILLATE—Gallons						
Stocks, Nov.15	2,704,000	5,794,000	1,762,000	205,000	328,000	10,793,000
Prod. 11-15 to 11-22..	714,000 + 14.8	992,000 + 12.0	241,000 — 12.1	121,000 — 13.6	202,000 — 4.3	2,270,000 + 6.4
Ship. 11-15 to 11-22..	665,000 + 22.2	1,141,000 + 22.7	369,000 + 14.6	98,000 + 18.1	203,000 + 5.7	2,476,000 + 19.6
Stocks, Nov. 22.....	2,753,000 + 1.8	5,645,000 — 2.6	1,634,000 — 7.3	228,000 + 11.2	327,000 — 0.4	10,587,000 — 1.9
Ratio Sales to Prod...	93.1%	115.0%	153.1%	81.0%	100.5%	109.1%
GAS OIL—Gallons						
Stocks, Nov. 15.....	3,810,000	38,116,000	2,636,000	14,118,000	5,109,000	63,789,000
Prod. 11-15 to 11-22..	1,559,000 + 6.6	1,750,000 — 26.8	401,000 — 30.9	850,000 +369.6	2,131,000 — 7.1	6,691,000 + 3.1
Ship. 11-15 to 11-22..	2,657,000 + 50.9	1,154,000 — 68.5	273,000 + 1.8	2,328,000 +177.8	1,927,000 + 11.1	8,839,000 + 0.8
Stocks, Nov. 22.....	2,712,000 — 28.8	38,712,000 + 1.6	2,264,000 — 14.1	12,640,000 — 10.5	5,313,000 + 4.0	61,641,000 — 3.4
Ratio Sales to Prod...	170.4%	65.9%	192.8%	272.9%	90.4%	132.1%
FUEL OIL—Gallons						
Stocks, Nov. 15.....	13,524,000	41,280,000	67,950,000	27,489,000	22,081,000	172,324,000
Prod. 11-15 to 11-22..	4,841,000 — 6.3	7,824,000 — 7.6	8,614,000 — 3.8	5,040,000 — 3.2	6,090,000 — 4.4	32,409,000 — 5.1
Ship. 11-15 to 11-22..	5,072,000 — 1.6	8,757,000 + 1.1	8,278,000	6,134,000 — 5.3	6,211,000 + 3.7	34,452,000 — 1.5
Stocks, Nov. 22.....	13,293,000 — 1.7	40,347,000 — 2.3	68,286,000 + 0.5	26,395,000 — 4.0	21,960,000 — 0.5	170,281,000 — 1.2
Ratio Sales to Prod...	104.8%	111.9%	96.1%	121.7%	102.0%	106.3%

Gasoline Produced by Various Methods, Week Ended November 22

	Kansas	% of Total	Oklahoma	% of Total	North & Cent. Texas	% of Total	West Texas	% of Total	Louisiana-Arkansas	% of Total	Total	% of Total
Straight Run.....	6,617,000	65.2	12,915,000	67.6	6,317,000	71.7	3,187,000	89.6	1,170,000	21.8	30,206,000	64.3
Cracked.....	2,904,000	28.6	4,923,000	25.8	1,674,000	19.0	124,000	3.5	3,374,000	62.9	12,999,000	27.7
Natural.....	631,000	6.2	1,260,000	6.6	824,000	9.3	246,000	6.9	823,000	15.3	3,784,000	8.0
Total.....	10,152,000		19,098,000		8,815,000		3,557,000		5,367,000		46,989,000	

+ or — columns are % change over previous week.

Mid-Continent Refiners Reduce Crude Runs

Staff Special—By Telegraph
TULSA, Nov. 25

CRUDE runs at 93 Mid-Continent refineries reporting weekly operations to this publication were reduced 11,400 barrels daily average in the third week in November with each district sharing in lower throughput figures.

Gasoline production was lower by a million gallons than for the second week of the month. Gasoline shipments were lower by 700,000 gallons. Virtually all this loss was registered in north Texas and Louisiana-Arkansas with West Texas steady and Kansas and Oklahoma showing slight shipment increases.

Louisiana-Arkansas reduced production sufficiently to permit a reduction in stocks. Stocks on hand at all plants at the close of the week were

Summary for the Month

Production and shipments, all reporting refineries, for four weeks ended Nov. 22. Change in stocks figures from Oct. 25.

GASOLINE

	Gallons
Production	190,919,000
Shipments	184,307,000
Net change in stocks	6,612,000
Ratio sales to production	96.5%

KEROSENE

Production	26,514,000
Shipments	20,051,000
Net change in stocks	6,463,000
Ratio sales to production	75.6%

STOVE DISTILLATE

Production	8,778,000
Shipments	8,602,000
Net change in stocks	176,000
Ratio sales to production	97.9%

GAS OIL

Production	29,359,000
Shipments	34,341,000
Net change in stocks	—4,982,000
Ratio sales to production	117.0%

FUEL OIL

Production	130,507,000
Shipments	136,380,000
Net change in stocks	—5,873,000
Ratio sales to production	104.4%

above 100,000,000 gallons for the first time since the week ended Sept. 6. Lowest stocks for year to date were reported Oct. 4, the total being 89,482,000 gallons.

Kerosene stocks were increased. Production was off 300,000 gallons and shipments 600,000 gallons. Colder weather increased distillate shipments and stocks were reduced slightly. Gas oil and fuel oil stocks also were reduced.

Texas Co. to Move General Offices

NEW YORK, Nov. 22.—Announcement has been made by the Texas company that it will occupy office space in the new Chrysler building, corner of 42nd street and Lexington avenue, New York, upon that building's completion in 1930. The building will be New York's tallest skyscraper, plans calling for a structure 68 stories high.

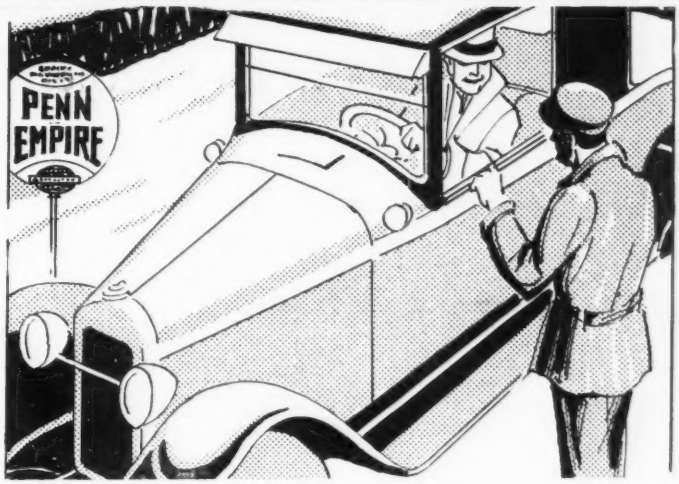
The lease is said to be one of the largest ever recorded for office space and carries an optional clause for expansion. Seventeen floors will be taken over which will quarter the entire executive, administrative, engineering, clerical and sales force. The exact location of the space, whether near the street or top of the building, was not given out.

President R. C. Holmes has stated that the company has outgrown its present quarters in the Whitehall building at 17 Battery Place, where offices have been maintained since 1907. Its lease there will expire in 1930.

Locke to Visit Customers In South America

TULSA, Nov. 23.—George D. Locke, vice president of Barnsdall Refineries, Inc., with Mrs. Locke, will embark from New York, Dec. 28, on the S. S. Pan American for a two months trip to South America.

Mr. and Mrs. Locke will go to Buenos Aires, where Barnsdall products have been distributed by the Max W. Boley organization for the past seven years under the trade name "Bareco." They will sail from Valparaiso on their return trip Feb. 12 on the S. S. Santa Maria, and will visit several places on the west Coast of South America, thence through the Panama canal and landing at Havana. From that place they will return to the United States and will reach their home in Chicago about March 10.



Should the man at the pump be a Salesman?

If any filling station business is going to prosper, the man at the pump *must* be a salesman. Your station attendant makes the final impression on the customer before the sale. A vital factor in making this man at the pump a real salesman is the product he is selling. It must be a product that he is "sold on" himself, and, therefore, it must be of such obvious quality that the man at the pump has sound, new and distinctive selling points to offer his customers.

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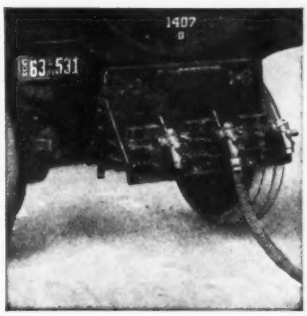

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Refinery - Tank Wagon Markets

National Petroleum News

Refined Oils Off in Mid-Continent Natural Gasolines Move Up

Staff Special
TULSA, Nov. 23

A REDUCTION of 0.25 cent in gasoline prices by a majority of Oklahoma refiners Nov. 20 and 21 put all sellers on a more competitive basis before the close of the week of Nov. 18-23. The bulk of gasoline sold in Mid-Continent markets Nov. 23 covered a narrower price range than had existed for several weeks past.

High gravity goods also were reduced in price by a majority of refiners in Oklahoma but at the same time the low spots of the previous week had disappeared. Gasoline demand was light in all districts, with contract orders accounting for bulk of movement.

Natural gasolines were tight with price advances made on all grades. A cargo of special natural gasoline was sold Nov 21 for export.

Kerosenes were practically lifeless Prices were lower in several quarters.

Fewer reports were heard of distress distillates Movement was considerably better. Zero gas oil movement also improved

Fuel oil prices were steady in all districts except north and west Texas Demand was slower as compared with movement at beginning of the month.

A lighter demand from the motoring trade for motor oil caused bright stocks and neutral oils to be easier in a few spots Wax was unchanged.

Gasolines

Two Oklahoma refiners on Nov. 20 reduced 58-60 U. S. Motor quotations from 7.50 to 7.25 cents and on the following day a majority of the other refiners who had been quoting 7.50 cents met the reduction. Many of these refiners also revised prices on other grades of gasoline.

The reduction on the part of the refiners enabled them to sell gasoline on a more competitive basis with those refiners who had been quoting from 6.75 cents up, both in Oklahoma and in other districts, when quotations were made on a group 3 basis. Little change was noted in the lower prices from the previous week.

Marketers offered gasoline from north Texas on a group 3 basis at 6.50 cents. Only odd cars of gasoline were sold on this basis, and most of it was off specification. North Texas refiners quoted U. S. Motor at 6.75 to 7 cents. Several reported that it was the quietest week the north Texas district had experienced for some time.

Buyers reported that higher gravity gasolines were offered less freely in all districts. Many of the previous week's low spots disappeared and the general price revision for these grades in Oklahoma brought quotations within a very narrow range.

Blending naphtha showed some improvement in price early in the week but the change in gasoline prices halted this upward trend. Quotations at the close of the week for 48-50 and 50-52, 450 e.p. grades ranged from 6.75 cents up, f.o.b. Oklahoma plants.

A check showed that only a few Oklahoma refiners offered this product in the open market for prompt shipment. Some of the refiners who formerly were a factor in the market had turned to the making of special naphthas.

No export purchases of refined gasolines were reported the past week.

Natural Gasolines

The only factor of major interest in the natural gasoline market was the reported sale of a cargo of special natural gasoline for export. This sale was made by a large manufacturer having a reprocessing plant at the Gulf. The cargo is to be loaded in December.

Two or three manufacturers continued to buy grade AA in the open market to apply on their own orders.

Other factors, such as cooler weather and the crude proration agreement which held down production of the higher grades somewhat, and the heavy movement on contract, caused a scarcity of these grades for immediate shipment.

Grade A moved up to a price range of 7 to 7.25 cents. It was understood that one buyer offered these prices for a limited quantity. Grade AA was quoted mostly at 6.875 to 7 cents a gallon.

By the end of the week grade B and BB also were comparatively scarce in the open market. One large buyer virtually had cleaned the market of grade C and quotations advanced in line with grades B and BB.

Kerosenes

The only kerosene buying of consequence reported was in Louisiana. Approximately 30 cars of 41-43 w.w. grade were bought by a large refiner who buys from time to time in the open market for his own accounts. The commodity otherwise was almost a drug on the market and stocks increased at practically all plants.

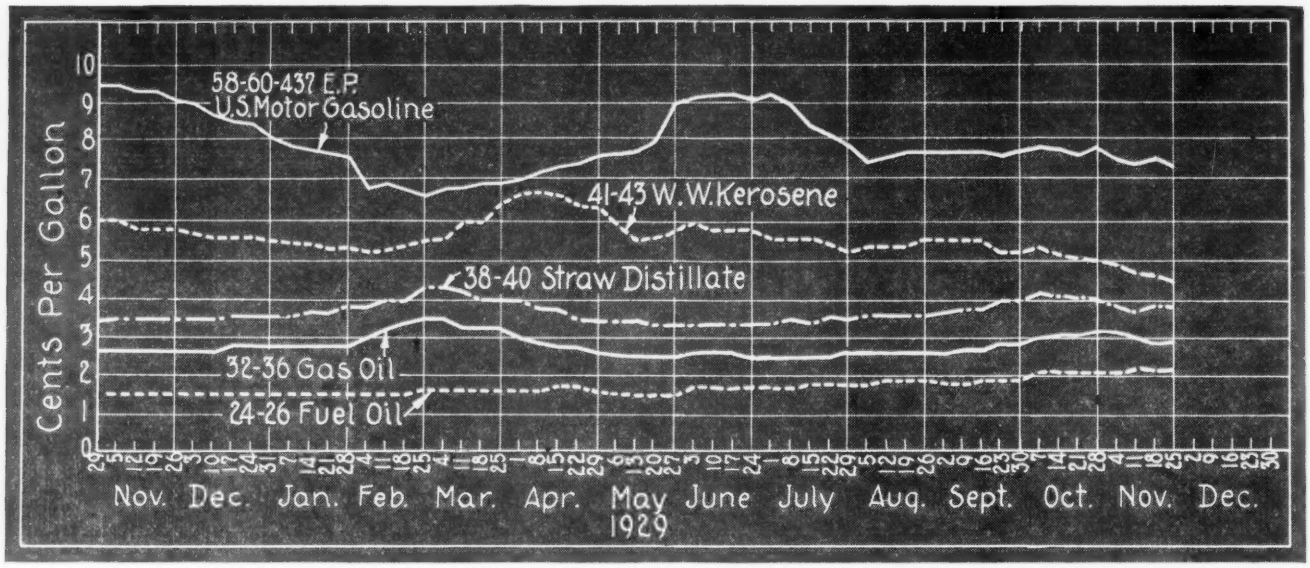
Bulk of 41-43 w.w. grade in Oklahoma moved at 4.375 to 4.75 cents.

Distillates and Gas Oils

Distillates moved more freely. Freezing weather in many sections of the Middle West caused increased consumption by home consumers and a steady inroad was cut into jobbers' stocks. Distress goods which had accumulated in several quarters disappeared, many buyers reported. Contract movement also increased. More 38-40 prime white treated distillate was produced in north Texas. Refiners making this grade asked a price slightly above the straw grade.

Zero grade of gas oils gained some price strength late in the week. A lighter demand was noted for U. G. I. grade although prices remained at the previous week's levels. Little of this

Current Prices of Principal Mid-Continent Refined Products


Cents Per Gallon
58-60-437 E.P. U.S. Motor Gasoline
41-43 W.W. Kerosene
38-40 Straw Distillate
32-36 Gas Oil
24-26 Fuel Oil
Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1929

Prices shown are in Group 3 basis and extended to date shown in Refinery Market Tables Section of this issue

grade was available for prompt shipment in Kansas. Refiners reported that the greater part of gas oil moved in the open market was recycle goods. Gas oils continued in good demand in the Arkansas and Louisiana markets at 3.25 to 3.50 cents, according to cold test. Odd cars of zero straw grade were reported sold out of both districts as high as 3.75 cents.

Cracked gas oil in north Texas drew away in price from the U. G. I. grade due to a better demand for zero grade.

Fuel Oils

Fuel oils in Oklahoma moved at a narrower price range. The low spots of the previous week disappeared. Several refiners were sold up for balance of the month. The general movement, however, was not as heavy as for the first two weeks of November. Prices were steady.

Goods originating in north and west Texas were offered slightly lower both f.o.b. point of origin and on a Group 3 basis.

Fuel oils in Kansas were comparatively scarce for prompt shipment.

Bright Stocks, Neutrals, Wax

Bright stock and neutral oils were not as tight as they had been for several weeks. Several manufacturers of bright stock reported they had caught up with orders and spot demand had eased off to where they had small quantities to offer. The greatest factor in the slower demand was the unfavorable motoring weather causing a decline in demand for motor oil. Both bright stock and neutral oils were offered from one or two sources at slightly lower prices. Wax was steady in demand and price.

Reduced Fare To Nebraska Meeting

LINCOLN, Neb., Nov. 25.—Railroads have granted fare and a half on the certificate plan from points in Illinois, Iowa, Kansas, Missouri, Nebraska, and South Dakota for delegates attending the Nebraska Independent Oil Men's Association meeting which will be held in Omaha at the Hotel Paxton from Dec. 11 to 13, according to C. M. Sutherland, secretary.

Illinois Starts New Cracker

TULSA, Nov. 22.—A cracking unit with a capacity of 1500 barrels daily, built by the Smith Engineering Co. for the Illinois Oil Co. at Cushing, Okla. was started early the past week. The unit's temperature had been raised by Nov. 16 into the cracking stage. Smith Engineering Co. engineers will operate the unit for a short time for final adjustments before turning it over to the purchasers.

NEW YORK, Nov. 23.—Mr. L. C. Wallach, Manager and Director of Sterns Limited, of London, one of the largest Independent oil operators of England and the Far East, arrived in New York this week on the Olympia.

Shipments From Southern California

LOS ANGELES, November 20.—Bulk petroleum shipments from Southern California ports for week ending November 16 were as follows:

Destination	Fuel	Diesel	Gasoline	Distillate	Kero.	Crude	Gas-Oil
Pacific For.	523,351	80,835	69,000	.....	.....	80,093	.....
Atlantic Dom.	.....	.....	468,429	.....	49,000	.....	82,761
Atlantic For.	.....	.....	146,849	.....	.....	.....	6,375

Prices 10 Years Ago
Nov. 24, 1919

	Oklahoma	Penna.
58-60 U. S. Motor.....	16.00–16.25c	19.50–20.00c
80-84 Natural	22.75–23.00c	.....
Kerosene (41-43 Okla.; 47 w. w. Pa.)	9.50–9.75c	13.00c
Fuel Oil (24-26 Okla.; 38-40 Pa.)	$1.50	7.50–8.00c
Crude (Okla. 35-35.9)....	$2.50	$4.50
Chicago tank wagon	.....	21.00c

Prices A Year Ago
Nov. 26, 1928

	Oklahoma	Penna.
58-60 U. S. Motor.....	9.1925c	10.50–11.00c
Grade A Natural	9.125c	.....
Kerosene (Okla. 41-43; Pa., 47 w. w.)	5.75–5.875	7.875–8.25c
Fuel Oil (Okla. 24-26; Pa. 36-40)	$0.65–$0.675	4.625–5.00c
Crude (Okla. 35-35.9)....	$1.31	$3.50
Chicago tank wagon	.....	15.00c

Chicago Resale Market

Cold Weather Stimulates Burning Oils

Staff Special
CHICAGO, Nov. 23

THE subnormal temperatures prevailing over the middle west during the past few days furnished the main topic of conversation in the Chicago resale market and also brought most of the business. Many domestic burner owners found their stock of oil were low and were forced to come into the market.

Tank wagon distributors of zero burning oils reported enjoying a fine business Nov. 22 and 23 and one said that deliveries on Nov. 22 were the heaviest so far this season. Apparently this increased demand in the tank wagon market was not generally reflected in the tank car market, as conflicting reports were given by both marketers and refiners.

A number of distributors said their spot sales of furnace oils had picked up considerably, while others said there was no apparent change in demand and that it would take at least another week of cold weather to bring an active demand from tank wagon distributors. They pointed out that most of the distributors with whom they did business had their storage tanks full and in some cases had not ordered out all their October commitments due to the mild weather.

Distillate and gas oil prices were generally unchanged over the week but several sellers reported they would advance their quotations early next week if the cold weather continued. One refiner reported closing a number of contracts for 38-40 light straw distillate at 4 cents for shipment over December. A Chicago oil distributor said he purchased some 32-36 dark zero gas oil for December delivery at 3 cents.

Fuel oils were in steady demand most of the week and quotations for two or three grades were advanced by several sellers. Practically all of the 28-30 and 18-22 zero fuel oils offered at $1.125 and $0.65 respectively early in the week, were off the market by Nov. 23. The bottom price for 28-30 zero was $1.15 and for 18-22 zero, $0.675.

The Chicago gasoline market passed another comparatively quiet week with little change noted in spot prices. Jobbers continued to buy mostly on a hand-to-mouth basis and consequently there was not a very heavy spot demand. Several sellers reported an increase in demand for high gravity gasolines and one or two said their demand for these grades was better than for U. S. Motor.

The range at which the bulk of 58-60 U. S. Motor gasoline moved to jobbers continued at 6.75 to 7.25 cents. Sales also were reported at 6.625 cents and 7.50 cents but these prices were not prevalent enough to be big factors in the market. However, sales at 6.625 cents were more numerous at the end of the week than previously.

Practically all of the refiners represented in the Chicago market who had been quoting U. S. Motor gasoline at 7.50 cents, reduced their quotations to 7.25 cents. Some of them reduced their prices on the higher gravity grades, while others made no changes on the latter products.

Kerosene showed few signs of life and demand was decidedly light in most quarters. Several sellers, however, reported a fair demand for this product. Very little change was noticed in quotations on the 41-43 w.w. grade. Most sellers continued to ask 4.50 to 4.75 cents. A number of sales were reported at 4.375 cents and an occasional one at 4.25 cents. One refiner said that he had no difficulty getting 4.50 cents for his 41-43 w.w. whenever he could locate a jobber needing any.

There probably will be one or two periods of precipitation in the Standard of Indiana territory next week, says the Chicago weather bureau. Temperatures are likely to be normal or below most of the week.

Refinery Plans Premature

TULSA, Nov. 22.—Newspaper accounts to the effect that Anderson-Prichard Oil Corp. was preparing to build a refinery at Oklahoma City, were decidedly premature, officials of the company stated Nov. 9. The officials have had some discussions with city officials at Oklahoma City, it was said, with reference to prospective sites, but these discussions were primarily to protect the corporation's interests should a decision be reached later to construct a refinery. The corporation only recently completed extensive expansion programs at its Cyril, Okla., and Colorado, Tex. refineries.

CHICAGO, Nov. 25.—The Henry H. Cross Co. recently opened a new 1500-barrel topping plant at Dupo, Ill. The crude oil used will be from the Dupo field, where both the Cross Co. and the Ohio Oil Co. have gathering lines.

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Comparative Prices of 58-60 U. S. Motor Gasoline, 437 E. P., Group 3 and Point of Origin, to Jobbers Only

In Effect November 25

	Price F.O.B. Group 3		*Price F.O.B. Point of Origin*		*If for Particular Destination*
Oklahoma	7.2500	(Wt. Avg.)	7.2500	(Wt. Avg.)	
Kansas	7.00–7.25				S. O. Neb. & Indiana Territory, etc.
Kansas			7.5000	(Wt. Avg.)	Kansas only.
North Texas	7.00		6.75–7.00		
West Texas	6.875–7.00		6.625–6.75		
Louisiana-Arkansas	7.00–7.25				Michigan, Ohio and Indiana.
Louisiana-Arkansas			7.50		State or differential haul.
Indiana-Illinois	7.00–7.25		*		S. O. Indiana territory except Detroit and vicinity. For Ohio on delivered basis only.

*Shipments made from E. Chicago, Ind., and Wood River, Ill., according to conditions and freight rates; no prices F.O.B. point of origin can be given.

Chicago Resale Market

(F. o. b. Group 3, altho goods may originate elsewhere)

	Prices Nov. 25	Prices Nov. 18	Prices Nov. 11
58-60 U.S. Motor, 437 e.p.	6.75 – 7.25	6.75 – 7.25	6.875– 7.50
60-62 437 e.p. gasoline	6.875– 7.50	7.00 – 7.50	7.125– 7.625
60-62 400 e.p. gasoline	7.375– 7.75	7.375– 7.75	7.375– 7.75
64-66 375 e.p. gasoline	7.875– 8.125	7.875– 8.125	7.875– 8.125
41-43 w.w. kerosene	4.375– 4.75	4.50 – 4.75	4.50 – 4.75
38-40 straw distillate	3.75 – 3.875	3.75 – 4.00	3.75 – 4.00
32-36 ordinary dark gas oil	2.875– 3.00	2.875– 3.00	2.875– 3.00
32-36 dark zero gas oil	3.00 – 3.25	3.00 – 3.25	3.125– 3.25
32-36 straw zero gas oil	3.125– 3.375	3.125– 3.375	†3.25 – 3.375
28-30 zero fuel oil	$1.15 –$1.20	$1.125–$1.20	†$1.125–$1.20
28-30 fuel oil	$1.05 –$1.10	$1.025–$1.075	$1.025–$1.075
24-26 fuel oil	$0.85 –$0.875	$0.85 –$0.875	$0.85 –$0.875
18-22 fuel oil, low sulfur	$0.65 –$0.675	$0.65 –$0.675	$0.65 –$.0675
18-22 fuel oil, high sulfur zero	$0.675–$0.725	$0.675–$0.725	$0.675–$0.725

Weighted Average Prices

OKLAHOMA

	Nov. 25		Nov. 18		Nov. 11	
	No. of cars	Price	No. of cars	Price	No. of cars	Price
58-60 U. S. Motor, 437 e.p.	49	7.2500	45	7.4972	25	7.4250
60-62 437 e.p. gasoline	2	7.3750	2	7.6250	2	7.2500
60-62 400 e.p. gasoline	4	7.5000	5	7.7500	1	7.5000
64-66 375 e.p. gasoline	2	8.1250	No sales reported		No sales reported	

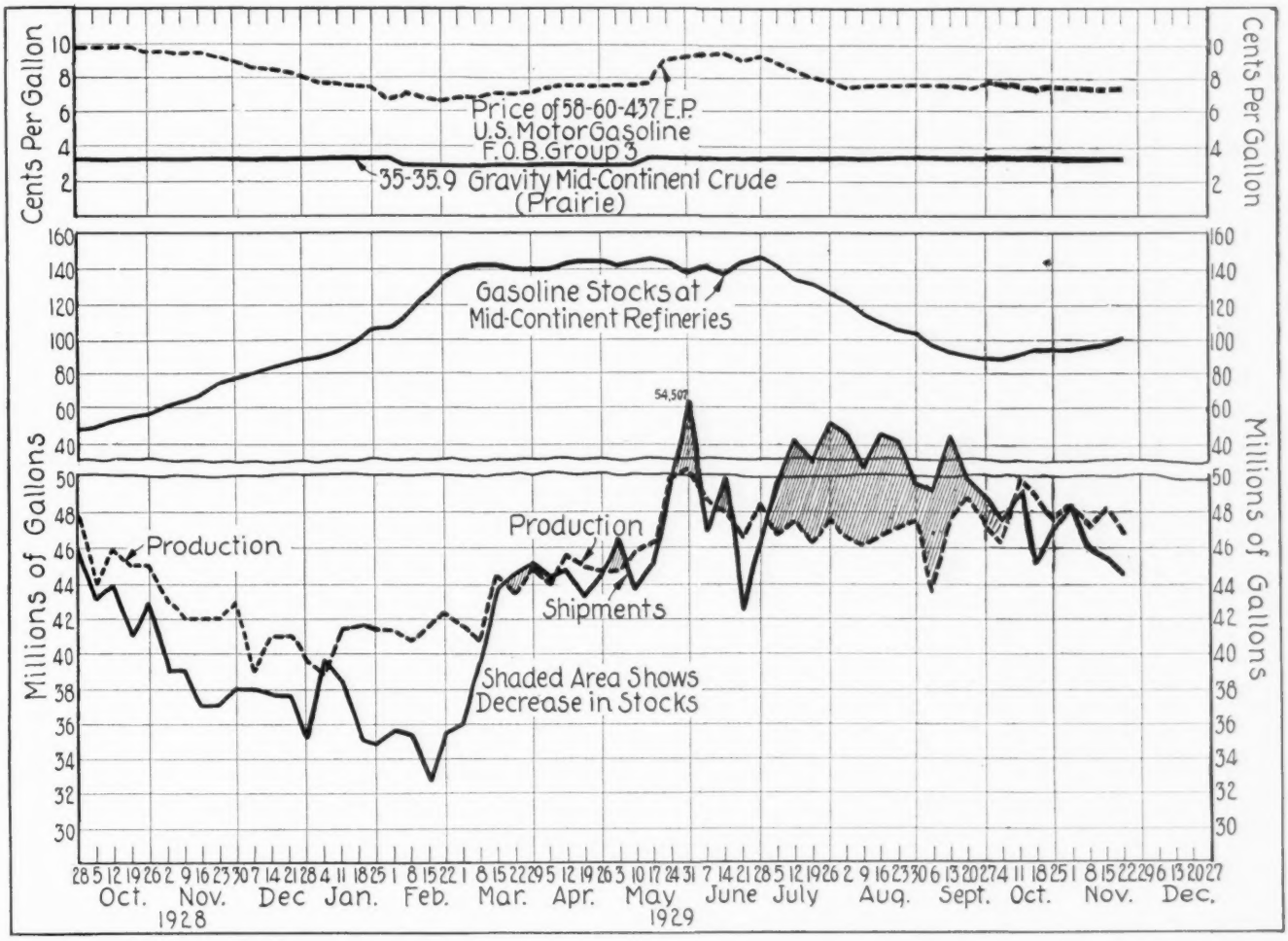
KANSAS

	Nov. 25		Nov. 18		Nov. 11	
	No. of cars	Price	No. of cars	Price	No. of Cars	Price
58-60 U. S. Motor, 437 e.p.	5	7.5000	No sales reported		No sales reported	

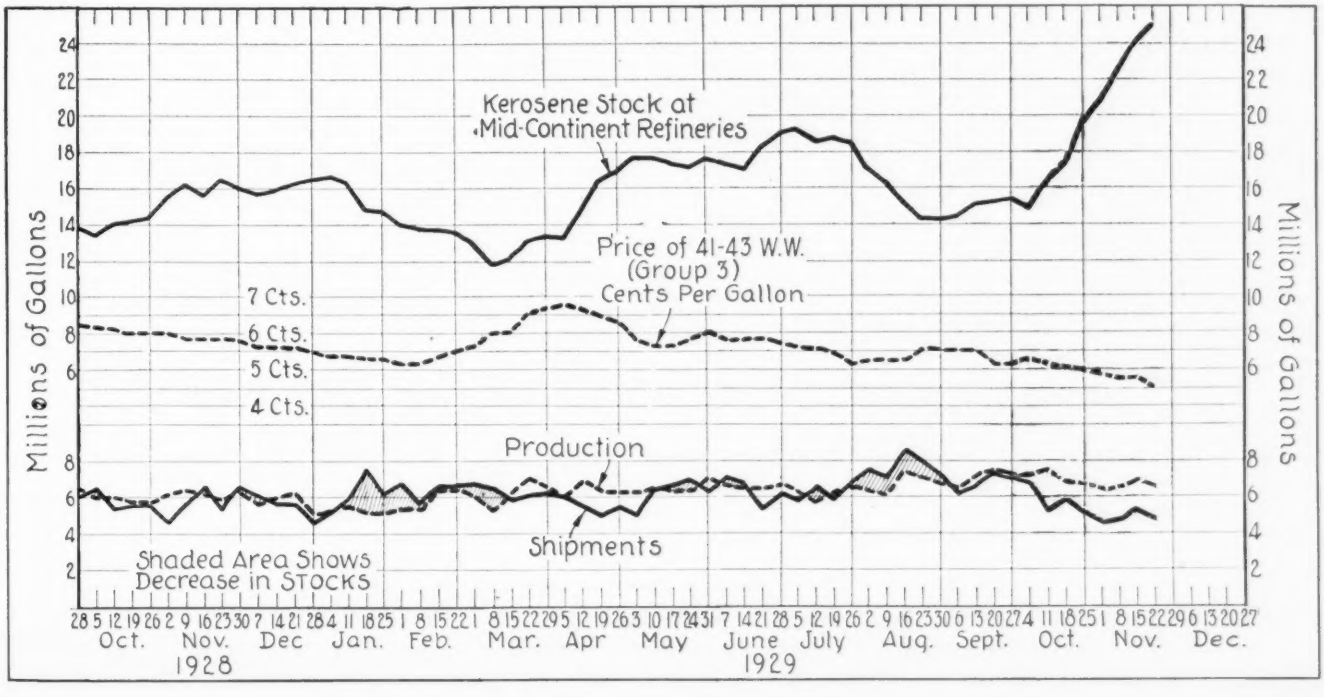
†Prices nominal

Barometer of Mid-Continent Refinery Market—Week Ending November 22

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News



Prices shown above are extended to date shown in Refinery Market and Crude tables in Market section of this issue and stocks, shipments and Production are extended to date as shown in the table on page 114



Refinery Markets on Light Oils and Lubricants

Prices given below are in cents per gallon, F. O. B. refinery except where $ is shown

(These Refinery Prices compiled in the OIL PRICE HANDBOOK for a whole year)

GASOLINE AND NAPHTHA

OKLAHOMA	Prices Nov. 25	Prices Nov. 18	Prices Nov. 11
48-50 450 e.p. naphtha...	6.75 – 7.00	7.00 – 7.25	7.00 – 7.25
50-52 450 e.p. naphtha...	6.75 – 7.00	7.00 – 7.25	7.00 – 7.25
56-58 450 e.p. gasoline...	6.625– 7.00	6.625– 7.00	6.75 – 7.00
58-60 450 e.p. gasoline...	6.75 – 7.00	6.75 – 7.00	6.75 – 7.00
64-66 390 e.p. gasoline...	7.50 – 7.75	7.75 – 8.00	7.75 – 8.00
68-70 350-360 e.p. gasoline	8.00 – 8.25	8.00 – 8.375	8.00 – 8.25
PENNSYLVANIA			
52-54 Naphtha.....	7.25 – 8.00	7.50 – 8.25	7.75 – 8.00
54-56 Naphtha.....	7.50 – 8.25	7.75 – 8.00	7.75 – 8.25
58-60 U.S. Motor 437 e.p.	8.25 – 9.00	8.25 – 9.00	8.25 – 9.00
60-62 400-410 e.p. gasoline	8.50 – 9.25	8.50 – 9.25	8.75 – 9.50
64-66 390 e.p. gasoline....	8.875– 9.50	9.00 – 9.75	9.25 –10.00
68-70 Str-run gas 350-360 e.p.....	10.00 –10.50	10.00 –10.50	10.00 –11.00
OHIO (Quotations of S. O. Ohio. 4c state tax to be added.)			
U. S. Motor Gasoline			
Ohio, delivery at any point.....	10.00	10.00	10.00
KANSAS (F. O. B. refinery Kansas destination)			
60-62 400 e.p. gasoline...	7.75	7.75 – 8.00	7.75 – 7.875
64-66 375 e.p. gasoline...	8.00	8.00 – 8.25	8.00 – 8.25
NORTH TEXAS			
56-58 450 e.p. gasoline...	6.50 – 6.625	6.625	6.625
58-60 450 e.p. gasoline...	6.625– 6.75	6.625– 6.75	6.625– 6.75
58-60 U.S. Motor 437 e.p.	6.75 – 7.00	6.875– 7.00	6.75 – 7.00
60-62 400 e.p. gasoline...	7.00 – 7.25	7.00 – 7.25	7.00 – 7.25
64-66 390 e.p. gasoline...	7.50 – 7.625	7.625– 7.875	7.625– 7.75
64-66 375 e.p. gasoline...	7.75 – 8.00	7.75 – 8.00	7.75 – 7.875
68-70 350-360 e.p. gasoline	8.00 – 8.25	8.125– 8.25	8.00
****WEST TEXAS (F.o.b. West Texas refinery, for unrestricted shipment)**			
50-52 naphtha.....	6.00	5.875– 6.125	6.00 – 6.125
58-60 437 e.p. gasoline...	6.375– 6.625	6.50 – 6.75	6.625– 6.75
58-60 U.S. Motor 437 e.p. gasoline.....	6.625– 6.75	6.75 – 6.875	6.75 – 7.00
NORTH LOUISIANA (N. La., Ark. and Miss. destination)			
58-60 U.S. Motor gasoline	7.50	7.50	7.50
ARKANSAS (Ark., N. La. and Miss. destination)			
58-60 U.S. Motor 437 e.p.	7.50	7.50	7.50
CALIFORNIA (3c tax to be added to California gasoline prices if used in state.)			
54-58 U.S. Motor 437 e.p.	‡9.00 –10.00	‡9.00 –10.00	‡9.00 –10.00
58-61 375-400 e.p. gasoline	10.00 –11.00	10.00 –11.00	10.00 –11.00
42-45 Engine Distillate 445-480 e.p.....	7.50 – 8.00	7.50 – 8.00	7.50 – 8.00

‡For outside state shipment price was 7.25–8.25c on Oct. 21. 7.00–8.00c on Oct. 28 and Nov. 4. 6.50–7.25c on Nov. 11, 18 and 25.

NATURAL GASOLINE

(Note: End point of all grades, not over 375 F. Corrosion test adopted Oct. 1, 1927; A.S.T.M. Method D130-27T; doctor test, July 2, 1928.)

OKLAHOMA			
Grade AA, 80-87.9, 90% Recovery.....	6.75 – 6.875	6.75	6.625– 6.75
Grade A, 72-79.9, 90% Recovery.....	7.00 – 7.125	6.75 – 7.00	6.625– 6.75
Grade BB, 84-92, 85% Recovery.....	6.25	6.25	6.375
Grade B, 76-83.9, 85% Recovery.....	6.25	6.25	6.375
Grade C, 80-92, 78% Recovery.....	6.25	6.125– 6.25	6.25
NORTH TEXAS (F. o. b. Breckenridge)			
Grade AA, 80-87.9, 90% Recovery.....	6.875	6.75	6.625– 6.75
Grade A, 72-79.9, 90% Recovery.....	7.00 – 7.125	6.75 – 7.00	6.625– 6.75
Grade BB, 84-92, 85% Recovery.....	6.25 – 6.375	6.25	6.375
Grade B, 76-83.9, 85% Recovery.....	6.25 – 6.375	6.25	6.375
Grade C, 80-92, 78% Recovery.....	6.25 – 6.375	6.125– 6.25	6.25

†Prices nominal ††Only one refiner quoting *Quotations only

NORTH LOUISIANA (F. o. b. Monroe District)	Prices Nov. 25	Prices Nov. 18	Prices Nov. 11
Grade AA.....	†7.125	†7.00	†7.00
Grade BB.....	†6.50	†6.50	†6.625
Grade C.....	†6.50	†6.375	6.50
CALIFORNIA			
75-85, 375-390 e.p. blend	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50

BURNING OILS

PENNSYLVANIA			
45 w.w. kerosene.....	6.50 – 7.00	6.75 – 7.00	6.875– 7.25
46 w.w. kerosene.....	6.75 – 7.25	7.00 – 7.375	7.25 – 7.50
47 w.w. kerosene.....	7.00 – 7.50	7.25 – 7.75	7.375– 8.00
300 mineral seal.....	7.00 – 7.75	7.00 – 7.75	7.00 – 7.75
OKLAHOMA			
41-43 w.w. kerosene.....	4.25 – 4.75	4.50 – 4.75	4.50 – 5.00
42-44 w.w. kerosene.....	4.75 – 5.25	4.875– 5.125	5.125– 5.50
KANSAS (F. O. B. refinery Kansas destination)			
41-43 w.w. kerosene.....	5.00 – 5.25	5.00 – 5.25	5.125– 5.50
42-44 w.w. kerosene.....	5.50	5.50 – 5.625	5.75 – 6.00
NORTH TEXAS			
40-42 w.w. kerosene.....	4.00 – 4.25	4.125– 4.25	4.25 – 4.375
41-43 w.w. kerosene.....	4.25 – 4.50	4.375– 4.50	4.375
NORTH LOUISIANA (N. La., Ark. and Miss. destination)			
41-43 w.w. kerosene.....	5.00 – 5.50	5.00 – 5.25	5.25
42-44 w.w. kerosene.....	5.50	5.50	5.50
ARKANSAS (Ark., N. La. and Miss. destination)			
42-44 w.w. kerosene.....	5.50	5.50	5.50
CALIFORNIA			
38-40 w.w. kerosene.....	5.00 – 6.00	5.00 – 6.00	4.75 – 5.75

NEUTRAL OIL

PENNSYLVANIA			
Vis.		**(Viscosity at 70°F.)**	
200 No. 3 Assoc. Filt.....	24.50 –27.00	27.00	24.00 –26.00
180 No. 3 Assoc. Filt.....	19.50 –23.00	19.50 –23.00	19.00 –22.00
150 No. 3 Assoc. Filt.....	15.50 –18.00	15.50 –18.00	15.00 –18.00
		(Non Viscous)	
34 Grav. 330-340 Flash..	7.25 – 7.75	7.50	7.00 – 7.50

****OKLAHOMA**				
Vis.	**Color**		**(Viscosity at 100°F.)**	
100—No. 2.....		6.00 – 7.00	6.00 – 7.00	6.00 – 7.00
150—No. 3.....		7.50 – 8.00	7.50 – 8.25	7.50 – 8.25
150—No. 4.....		6.75 – 7.50	6.75 – 7.50	6.75 – 7.50
180—No. 3.....		9.00 – 9.50	9.00 – 9.50	9.00 – 9.50
180—No. 4.....		8.75 – 9.00	8.75 – 9.25	8.75 – 9.25
180—No. 5.....		8.50 – 8.75	8.50 – 9.00	8.50 – 9.00
200—No. 3.....		9.75 –10.00	9.75 –10.75	9.75 –11.00
200—No. 4.....		9.00 – 9.75	9.00 –10.00	9.00 –10.00
200—No. 5.....		9.00 – 9.25	9.00 – 9.50	9.00 – 9.50
220—No. 3.....		12.50 –13.50	12.50 –13.50	12.50 –13.50
220—No. 4.....		12.00 –12.50	12.00 –12.50	12.00 –12.50
220—No. 5.....		11.00 –12.00	11.00 –12.00	11.00 –12.00
240—No. 3.....		13.00 –13.50	13.00 –13.50	13.00 –13.50
240—No. 4.....		12.00 –13.00	12.00 –13.00	12.00 –13.00
240—No. 5.....		11.00 –12.50	11.00 –13.00	11.00 –13.00
280—No. 3.....		14.00 –16.00	14.00 –16.00	14.00 –16.00
280—No. 4.....		12.50 –15.00	13.00 –15.00	13.00 –15.00
280—No. 5.....		12.00 –14.00	12.00 –14.00	12.00 –14.00

****Represents Both Sales and Quotations.**

Refinery Markets Wax, Lubricants, Heavy Oil

Prices given below are in cents per gallon, F. O. B. refinery except where $ is shown

(For quick reference to Refinery Prices, get the OIL PRICE HANDBOOK, published annually)

GULF COASTAL

Vis.	Color	Prices Nov. 25	Prices Nov. 18	Prices Nov. 11
		(Viscosity at 100°F., pour test 0)		
100	No. 2 Pale	6.00 – 7.00	6.00 – 7.00	6.00 – 6.50
200	No. 3 Pale	9.00 – 9.50	9.00 – 9.50	9.00 – 9.50
300	No. 3 Pale	10.00 –10.75	10.00 –10.75	10.00 –10.50
500	No. 3½ Pale	11.50 –12.00	11.50 –12.00	11.50 –12.00
750	No. 4 Pale	12.50 –13.00	12.50 –13.00	12.50 –13.00
200	No. 5½ Red Oil	8.00 – 8.75	8.00 – 8.75	8.00 – 8.50
300	No. 5½ Red Oil	9.00 –10.00	9.00 –10.00	9.00 – 9.50
500	No. 6 Red Oil	9.50 –10.00	9.50 –10.00	9.50 –10.00
750	No. 6 Red Oil	11.50 –12.00	11.50 –12.00	11.50 –12.00

CALIFORNIA

Vis.	Color			
		(Viscosity at 100°F.)		
100	No. 3	9.50 –10.00	9.50 –10.00	9.50 –10.00
200	No. 3	11.50	11.50	11.50
300	No. 3	13.00	13.00	13.00
450	No. 3	15.50	15.50	15.50
550	No. 3	16.50	16.50	16.50
600	No. 3	17.00	17.00	17.00
200	No. 5	11.00	11.00	11.00
300	No. 5	12.00	12.00	12.00
400	No. 5	14.00	14.00	14.00
500	No. 5	15.00	15.00	15.00
600	No. 5	16.00	16.00	16.00
700	No. 7	18.00	18.00	18.00

CYLINDER STOCKS

**OKLAHOMA

190-200 Vis. D at 210° Brt. St.	40.00 –42.00	40.00 –42.00	40.00 –42.00
150-160 Vis. D at 210° Brt. St.	37.00	37.00	37.00
150-160 Vis. E 210° Brt. St.	33.00 –35.00	33.00 –36.00	34.00 –36.00
600 St. Ref. Olive Green	9.00 –17.00	10.00 –15.00	10.00 –15.00
600 St. Ref. Dark Green	9.00 –11.00	9.00 –12.00	10.00 –12.00
Black Oil	5.00	5.00	5.00

PENNSYLVANIA (A. S. T. M. Tests)

600 Steam Refined, filterable	27.00 –28.00	27.00	27.50 –29.00
650 Steam Refined	31.00 –31.50	32.00	31.50 –32.00
600 Flash	33.00 –34.50	34.50	32.00 –34.00
625 Flash	36.00 –37.00	36.00 –37.00	36.00 –37.00
600 Warren E	32.00 –32.50	32.00 –32.50	32.00 –32.50
600 Oil City E	31.00 –32.00	32.00	31.00 –32.00
600 D Filtered	36.50 –37.00	36.50 –37.00	36.50 –37.00
Cold Test Stock, 40-50 p. p., 140-150 vis. at 210° 540-550 flash, No. 8 color	49.00 –50.00	49.00 –52.00	50.00 –52.00
40-50 p.p., 140-150 vis. at 210°, 540-550 flash, No. 6-6½ color diluted	47.00 –48.00	†49.00	50.00

WAX

PENNSYLVANIA (Per pound, New York)

122-124 white crude scale, a.m.p.	3.375– 3.50	3.375– 3.50	3.375– 3.50
124-126 white crude scale, a.m.p.	3.50	3.50	3.50 – 3.625

**OKLAHOMA

124-126 White Crude Scale, a. m. p.	3.00 – 3.125	3.00 – 3.25	3.125– 3.25

CALIFORNIA

White crude scale, per pound, ton lots, a.m.p.	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50

DISTILLATE, GAS AND FUEL OIL

PENNSYLVANIA (For outside Pittsburgh district)

36-40 fuel oil	5.00 – 5.25	5.00 – 5.25	5.125– 5.25
30-34 fuel oil	4.75 – 5.00	4.875– 5.00	4.875– 5.00
28-32 fuel oil	4.75 – 5.00	5.00	4.875– 5.00

†Prices nominal ††Only one refiner quoting *Quotations only

OKLAHOMA

	Prices Nov. 25	Prices Nov. 18	Prices Nov. 11
38-40 straw distillate	3.75 – 4.00	3.75 – 3.875	3.625– 3.875
36-38 straw distillate	3.625– 3.75	3.625– 3.75	3.625– 3.75
32-36 straw gas oil	2.875– 3.00	2.875– 3.00	2.875–.3.125
32-36 straw gas oil zero	3.25 – 3.375	3.25	3.25
32-36 dark gas oil	2.75 – 3.00	2.75 – 3.00	2.875– 3.00
32-36 dark gas oil zero	3.125– 3.25	3.00 – 3.25	3.125– 3.25
28-30 zero fuel oil	$1.175– 1.20	†$1.175– 1.20	$1.15 –$1.20
28-30 fuel oil (in bbls.)	$1.05 – 1.10	$1.05 – 1.10	$1.05 –$1.10
26-28 fuel oil (in bbls.)	$0.90 – 1.00	†$0.925– 1.00	$0.90 – 0.95
24-26 fuel oil (in bbls.)	$0.875– 0.975	†$0.85 – 0.95	$0.875– 0.95
22-26 fuel oil (in bbls.)	$0.775– 0.85	$0.775– 0.825	$0.75 – 0.825
18-22 fuel oil (in bbls.)	$0.675– 0.75	$0.675– 0.725	$0.65 – 0.70
‡16-20 fuel oil (in bbls.)	$0.65 – 0.75	$0.60 – 0.70	$0.575– 0.675
14-16 fuel oil (in bbls.)	$0.65 – 0.75	$0.60 – 0.70	$0.575– 0.675

‡Gravity changed from 16-18 to 16-20, Aug. 19.

KANSAS (F. O. B. refinery Kansas destination)

38-40 straw distillate	4.00 – 4.25	4.00 – 4.25	4.125– 4.25
36-38 straw distillate	3.875– 4.00	4.00	4.00
32-36 straw gas oil	3.125– 3.375	3.125– 3.25	3.25
18-22 fuel oil	$0.725– 0.775	$0.70 – 0.75	$0.70 – 0.75
10-14 fuel oil	$0.70 – 0.75	$0.65 – 0.70	$0.65 – 0.70

NORTH TEXAS

38-40 straw distillate	3.625– 3.75	3.75 – 4.00	3.625– 4.00
38-40 p.w.treated distillate	3.75 – 4.00		
32-36 gas oil, cracked	2.875– 3.00	2.75 – 3.00	2.75 – 3.00
32-36 St. reduced gas oil	2.625– 2.75	2.625– 2.75	2.75 – 3.00
24-26 fuel oil (in bbls.)	$0.675– 0.725	$0.675– 0.725	$0.65 – 0.70
20-24 fuel oil	$0.60 – 0.65	$0.575– 0.65	$0.60 – 0.65
18-22 fuel oil	$0.55 – 0.65	$0.55 – 0.65	$0.575– 0.625

**WEST TEXAS (F. o. b. West Texas refinery, for unrestricted shipment)

34-38 gas oil	2.75	2.75 – 3.00	3.00
30-32 gas oil	2.625– 2.75	2.50 – 2.75	2.625– 2.75
28-30 zero gas oil	2.75 – 3.00	3.00 – 3.25	3.125– 3.25
18-22 fuel oil	$0.525– 0.60	$0.55 – 0.65	$0.525– 0.65

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

32-36 gas oil, dark	3.25 – 3.50	3.25 – 3.50	3.25 – 3.50
32-36 gas oil, straw	3.25 – 3.50	3.25 – 3.50	3.25 – 3.50
14-16 fuel oil (in bbls.)	$0.75 – 0.825	$0.75 – 0.825	$0.75 – 0.80

ARKANSAS (Ark., N. La. and Miss. destination)

32-36 gas oil, straw	3.25 – 3.50	3.25 – 3.50	3.25 – 3.50
32-36 dark gas oil	3.25 – 3.50	3.25 – 3.50	3.25 – 3.50
28-30 gas oil	3.00 – 3.25	3.00 – 3.25	3.125– 3.25
14-16 fuel oil	$0.675– 0.80	$0.75 – 0.825	$0.75 – 0.80

CALIFORNIA (F. o. b. San Joaquin Valley. At San Francisco 4c per bbl. more)

14-18 fuel oil (per bbl.)	$0.45 –$0.65	$0.40 –$0.60	$0.40 –$0.60
14-18 Bunker oil (per bbl.)	$0.70 –$0.75	$0.70 –$0.75	$0.70 –$0.75
30-34 gas oil (per bbl.)	$0.80 –$0.90	$0.80 –$0.90	$0.80 –$0.90
27 Plus Diesel oil (per bbl.)	$0.80 –$0.90	$0.80 –$0.90	$0.80 –$0.90

PETROLATUMS

PENNSYLVANIA (In barrels, carload lots, f. o. b. refinery. In tank cars ⅝c to ¾c per pound less.) Two refiners quoting.

Snow White	8.75 – 9.00	8.75 – 9.00	8.75 – 9.00
Lily White	7.75 – 8.00	7.75 – 8.00	7.75 – 8.00
Cream White	6.75 – 7.00	6.75 – 7.00	6.75 – 7.00
Light Amber	3.75	3.75	3.75
Amber	3.50	3.50	3.50
Red	3.25	3.25	3.25

PETROLEUM COKE

**OKLAHOMA

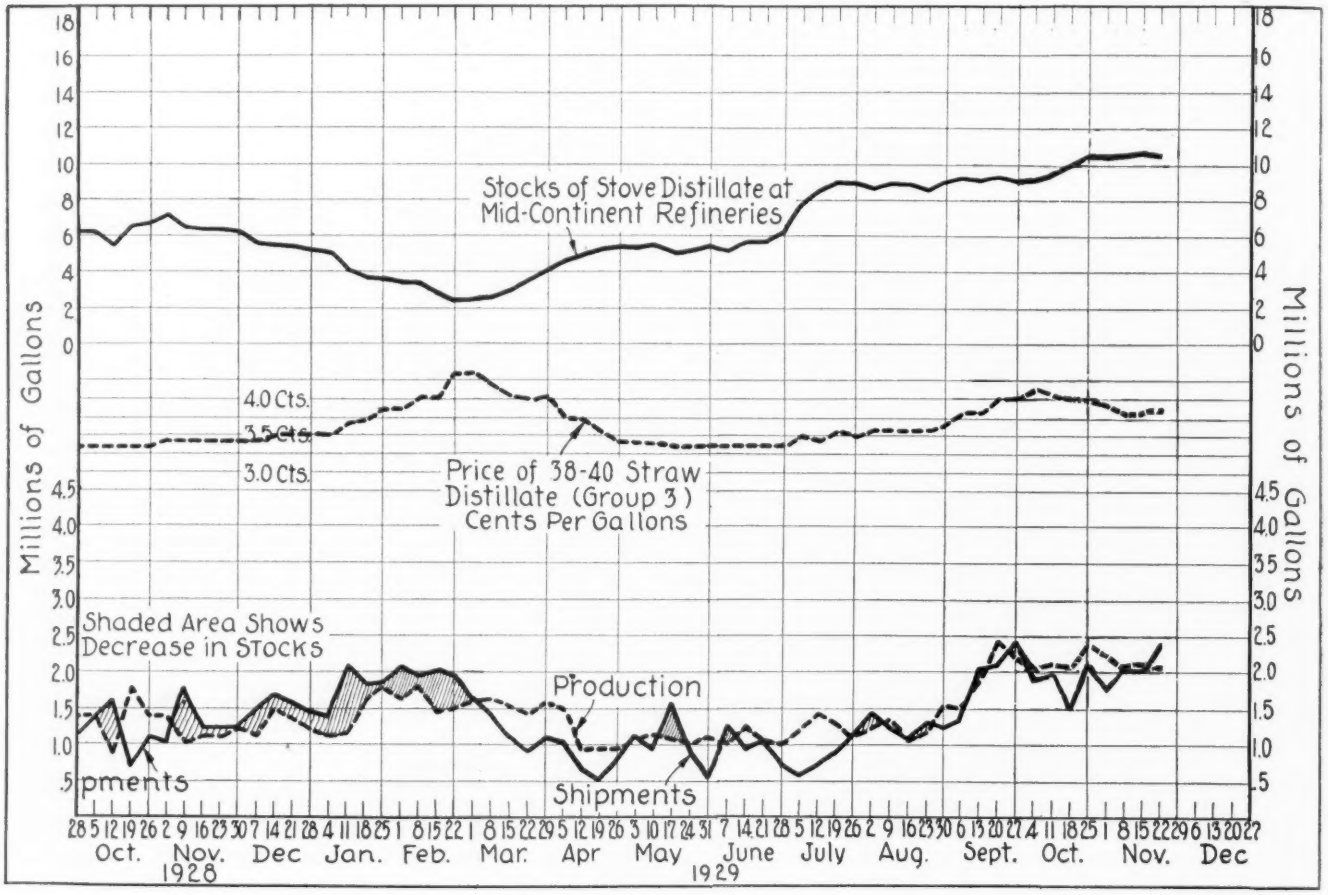
(Per ton in car lots)

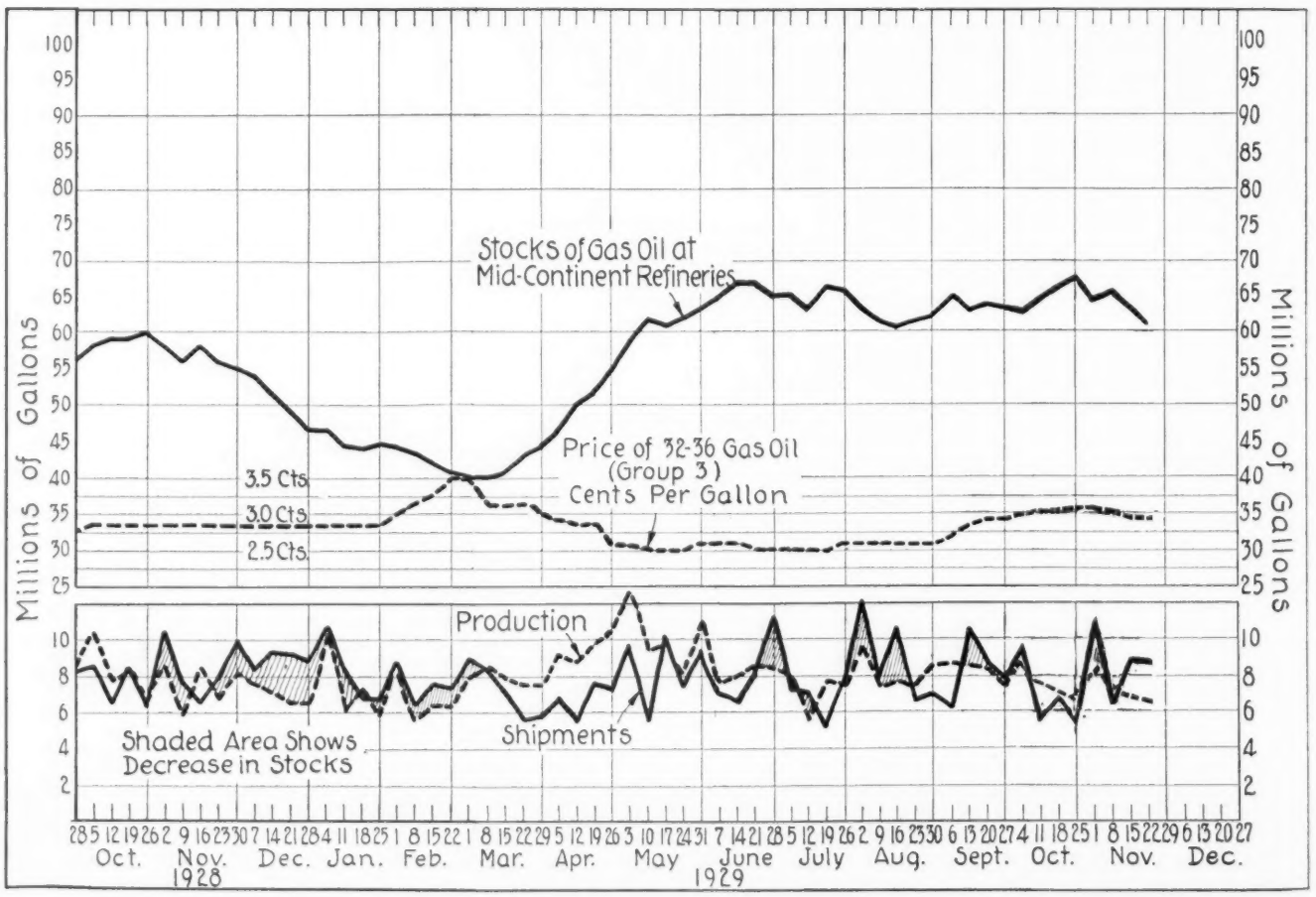
Lump	$4.50 – 5.00	$4.50 – 5.00	$4.50 – 5.00
Still run	$3.00	$3.00	$3.00
Breeze	$2.00	$2.00	$2.00

**Represents Both Sales and Quotations.

Barometer of Mid-Continent Refinery Market—Week Ending November 22

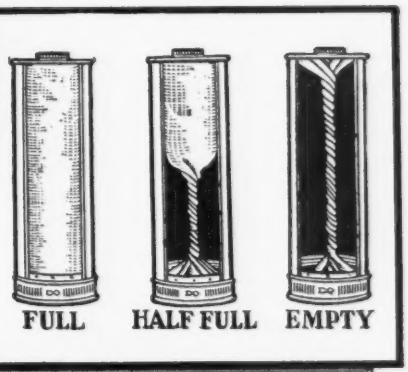
Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 98 Plants to National Petroleum News


Millions of Gallons
Millions of Gallons
Stocks of Stove Distillate at Mid-Continent Refineries
4.0 Cts.
3.5 Cts.
3.0 Cts.
Price of 38-40 Straw Distillate (Group 3) Cents Per Gallons
Shaded Area Shows Decrease in Stocks
Production
Shipments
Oct. Nov. Dec Jan. Feb. Mar. Apr May June July Aug. Sept. Oct. Nov. Dec
1928
1929


Millions of Gallons
Millions of Gallons
Stocks of Gas Oil at Mid-Continent Refineries
3.5 Cts.
3.0 Cts.
2.5 Cts.
Price of 32-36 Gas Oil (Group 3) Cents Per Gallon
Production
Shipments
Shaded Area Shows Decrease in Stocks
Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1928
1929

Follow the LEADERS!

The actuating principle of CANTUBE is simplicity itself. A flexible bag inside the can holds the grease—turning the swivel bottom twists the bag and expels the grease.



"DON'T envy your competitor's success—adopt his methods" is sound advice. When Valvoline, Beacon, Johnson, Sunset and other leading oil companies who appreciate the sales advantage of CANTUBE and adopt it for their grease, you can hardly go wrong in following their example.

A glance at the sketch will make the advantages of CANTUBE instantly apparent. CANTUBE provides the consumer with the utmost in convenience, cleanliness and economy when transferring grease to gun or cup. A twist of the wrist and the can expels just as much as is wanted without muss or fuss or waste.

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Firm Name.....

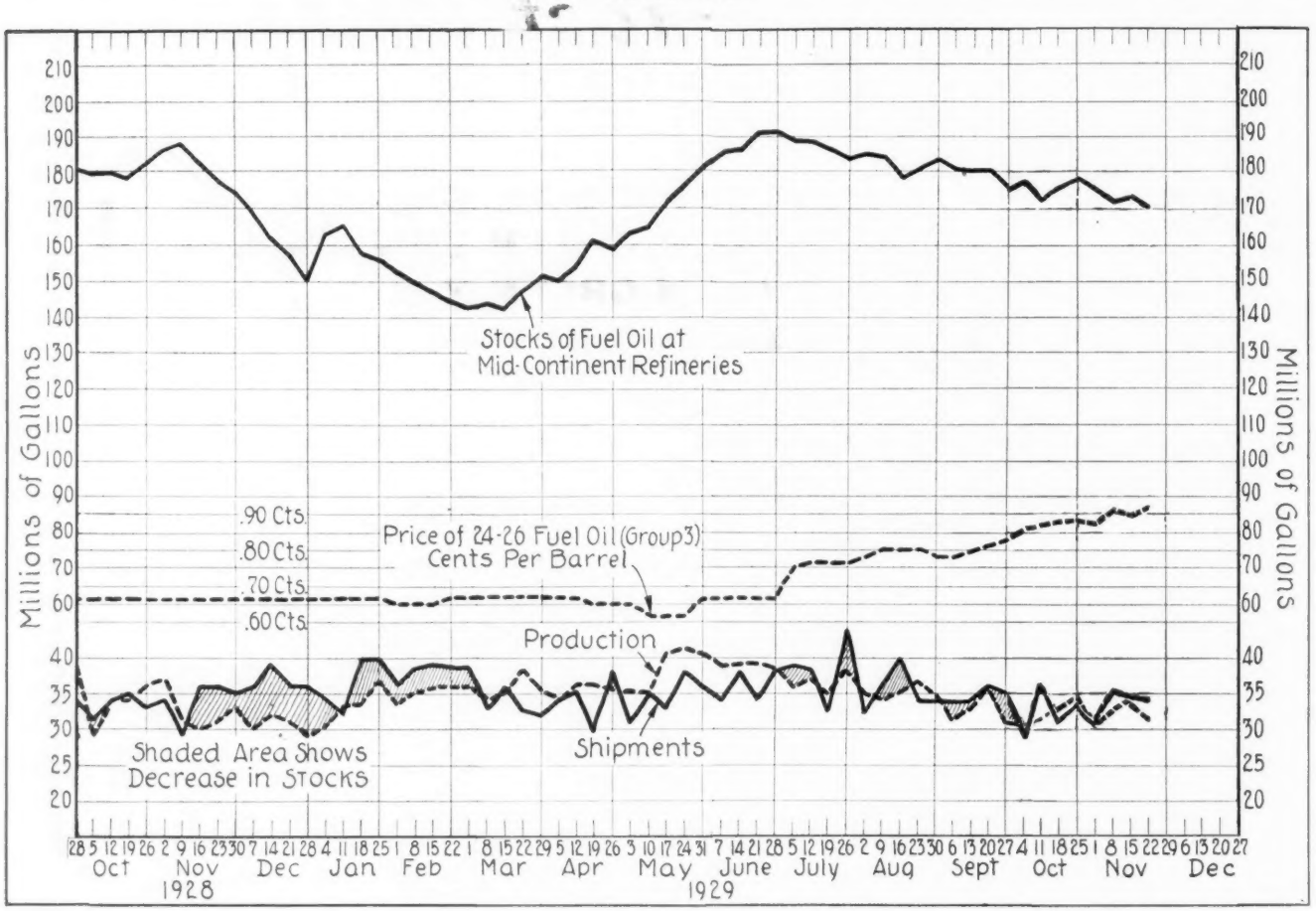
Attention of.....

Address.....State.....

City.....

Barometer of Mid-Continent Refinery Market—Week Ending November 22

Charted Course of Prices, Production, Shipments, Stocks of Refined Products, Week by Week, From Reports Made by 93 Plants to Petroleum News


Millions of Gallons
Millions of Gallons
Stocks of Fuel Oil at Mid-Continent Refineries
.90 Cts.
.80 Cts.
.70 Cts.
.60 Cts.
Price of 24-26 Fuel Oil (Group 3) Cents Per Barrel
Production
Shipments
Shaded Area Shows Decrease in Stocks
Oct Nov Dec Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec
1928
1929

California Refinery Market

Distress Goods Disappearing Slowly

LOS ANGELES, Nov. 21—MARKET conditions on the Pacific Coast have not been bettered particularly as yet by the return to normal of crude oil prices and a reduction in daily average production from 862,000 barrels on Oct. 31 to 674,000 barrels on Nov. 15.

There has been, however, considerably less distress goods in the open market and low quotations on many products frequently have been withdrawn to be replaced by higher figures.

Although inquiries from offshore buyers continued to be numerous, very few spot sales were reported. Part of a cargo of gas oil, approximately 42,000 barrels, was sold during the past week for delivery to the Atlantic seaboard. The price for this goods was reported to have been in the neighborhood of $0.80 a barrel. Some of this commodity has been moving as low as $0.75 a barrel but quotations vary from $0.80 to $1.00 a barrel.

Exporters are confident that tanker rates will be reduced within a short time and that as a consequence offshore trade will snap out of the inertia that has held it at a standstill for the past six months.

Gasoline shipments to the eastern market under contract slumped during the past week as several companies surveyed their eastern supply and demand.

Although U. S. Motor for out of state consumption was freely offered at from 6.50 to 7.25 cents, a few companies refused to sell at even the higher figure and stated they expected a higher out-of-state price within a few weeks.

Gasoline destined for in-state consumption moved in small quantities at from 9 to 10 cents, exclusive of tax. Continued fair demand for this commodity together with good distribution has prevented the cut that was threatened several weeks ago.

Other petroleum products remained unchanged from last week's quotations and for the most part they were inactive. Fuel oils were in fair demand although most of this goods was moving under contract.

Retail market conditions in California are once again assuming normal appearances and resellers predict a good winter business. Excellent motoring weather has prevented any great decrease in the demand for motor fuel. A few cut rate gasoline stations are still in existence on the Pacific Coast but marketers expect to have these in line before the first of the year.

Association Proceedings Ready

CLEVELAND, Nov. 22.—Proceedings of the annual meeting of the National Gasoline Association of America held at Tulsa last May have been published. Copies may be obtained from Ray E. Miller, secretary, at $1 each. The proceedings contain all papers presented and a summary of the research work conducted by Dr. G. G. Brown of the University of Michigan.

Pennsylvania Market

Burning Oils Active

CLEVELAND, Nov. 26.—Burning oils stood out prominently from the standpoint of demand in the western Pennsylvania market last week. Neutral oils, steam refined stocks and bright stocks experienced fair demand. Gasoline orders were much smaller in volume and activity in kerosene subsided materially.

The cold wave that spread over most of the western half of the country caused quite a flurry in the burning oil market. Prices were not stimulated to any extent but orders from the jobbing trade jumped from 1 and 2 car lots to 5 and 10 car lots.

One refiner reported selling 20 cars of 36-40 straw color oil at 5 cents for prompt shipment. Several sellers stated it took very little effort on their part to get 5.25 cents for their small current production. The lower grades of fuel oil continued relatively scarce; a minimum of 4.75 cents prevailed for the 30-34 and 28-32 grades with some sellers reporting sales at 5 cents.

Refiners in most districts were not pessimistic over the slump in gasoline demand; most of them in fact reported they had been expecting it with the first signs of real cold weather. In the Bradford district, however, where competition from the Atlantic seaboard is particularly keen, refiners said business was very unsatisfactory.

Reports of 8.125 cents being quoted direct to the jobbing trade for U. S. Motor gasoline were more prevalent but relatively few actual sales at this figure could be confirmed. The majority of sales from most districts were at 8.25 to 8.50 cents.

The demand for low cold test neutral oils increased coincident with the colder weather. Some refiners made further advances in their quotations while others continued to offer 200 No. 3 color and 150 No. 3 color oils at 24.50 cents and 15.50 cents, respectively.

Steam refined stocks continued comparatively tight. Current demand was practically at a standstill but most sellers still were sold up for the balance of November and there was virtually no distress goods in the market as there often times is toward the month-end.

The majority of bright stock manufacturers continued well sold up for the rest of the month. Both the No. 6-6½ color diluted and No. 8 color oils were offered 1 to 2 cents lower by some refiners and resale agents.

Wax was quiet and although bids from New York brokers were considerably lower than they were the previous week, refiners generally had made no change in their prices.

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Eastern Domestic Markets

Burning Oils Active; Prices Advancing

Staff Special
NEW YORK, Nov. 23

AN INCREASE in gas oil prices at Boston was the only price change noted in Eastern markets the past week. Some shading of gasoline prices was heard at Baltimore but it could not be confirmed. Gasoline was in fair demand in some districts and good in others, governed largely by weather conditions. Heavy oils were in good demand in all districts.

Quotations for gas oil at Boston, increased from a flat 4.75 cents, to 4.75 to 5 cents the past week. Cold weather has made its appearance in the east and has caused large consumption of domestic burning oils. Particularly was this true of the Boston district and other northern sections on the east coast.

One of the two larger companies asking the lower price reported that it probably would raise its quotation the first of next month. Contracts had been made the salesmanager said, at 4.75 cents over the consuming season which had taken care of a good portion of the company's production.

The price for gas oil at New York remained unchanged at 4.75 cents. Sellers were looking for higher prices, however.

The cold weather that boosted sales of heavy oils acted as a damper on gasoline prices in some districts. It was noticeable in New York but there was not a sufficient reduction in shipments to cause any reduction of tank car prices. All sellers were obtaining 8.75 cents for spot goods both in tank cars and in barges. Some suppliers said that barge shipments were overshadowing tank car business.

It was erroneously reported last week that a refiner at Boston had lowered its tank car price to 10 cents delivered. It did make a revision of prices at the refinery but the charge applied only to barge shipments. Consequently another company which had stated its price would be reduced the following week, made no reduction upon learning the first company had not reduced its tank car prices. All sellers were obtaining 10.25 cents delivered, both at Boston and Providence, although business was not brisk. Portland sellers were asking 10.75 cents as the general delivered quotation, but one company was quoting slightly higher.

There were reports the past week of gasoline moving from Baltimore into northwestern Pennsylvania at prices which netted about 8.75 to 8.875 cents at the refinery. However, it was impossible to trace these transactions. Some of the trade believed that if sales were being made at that figure they were for small lots only. The majority of suppliers were quoting 9 cents and accepting no business at lower figures. A distributor of California goods reported an excellent demand for a natural gasoline blend he offers. It has a low initial and makes a fine quick-starting winter fuel, he said.

Reports were again current the past week that jobbers were unwilling to sign contracts for future gasoline requirements under the "4 and 1" clause. Most of them were asking the privilege of buying in the open market at times when it might be more advantageous to them. A number of refiners were refusing to make contracts on that basis.

Some students of the market see a better spot market in the future if refiners refuse to grant the spot market clause in contracts and jobbers refuse to sign them unless they have that clause. More goods will be purchased in the open market, they believe, which will make prompt shipments better. One seller said prices probably would be fractionally lower in the latter case.

Kerosene sales were better the past week but prices were unchanged in all districts. Tank wagon markets reflect the sound position of kerosene prices and stocks. One large refiner, influential in determining tank wagon prices in the east, said that a 15-cent minimum throughout its territory probably would be reached within a few weeks. It has gradually been bringing prices up to that figure for several weeks.

Gulf Coast Markets

French Buyers Inquire for Two Cargoes

Staff Special
NEW YORK, Nov. 23

THERE was but little interest displayed in Gulf markets the past week. Two foreign buyers were in the market, one for a mixed cargo of gasoline and kerosene and the other for gasoline alone. No business was placed however. Prices for all commodities, both for export and domestic shipment, were unchanged.

Two French buyers came into the market around the middle of the week, but details of their inquiries were not generally known until Thursday. One sought a cargo of 72,250 barrels of 41-43 prime white kerosene, U. S. Motor, 64-66, 390 end point and 64-66, 375 end point gasoline. The other was for 39,100 barrels of U. S. Motor and 64-66, 375 end point gasoline. Both buyers asked for late December or early January shipment.

The buyers were Independent concerns, one of them the largest of French distributors. This same company inquired for a cargo some weeks ago but withdrew the inquiry a week after it was placed in the market. The other buyer has not been in the market for several months.

It was learned the past week that a Dutch buyer had been inquiring for the million barrel contract for U. S. Motor gasoline instead of a French account as reported the week before. The United States refiner whose London subsidiary inquired for the goods, said that if the business was placed, some American company would get it. There were no further developments in the transaction the past week.

Prices for all commodities at the Gulf were unchanged and suppliers were looking for no immediate change, particularly in those posted by the Association. While prices were somewhat lower in the field, stocks were still at a favorable level and few cargoes were believed available at low prices.

Lower kerosene prices in the field were expected to have some influence on quotations for domestic shipment from the Gulf. Texas and Oklahoma prices have declined considerably and goods can now be laid down at the Gulf slightly under quotations of Gulf refiners. On the other hand, some of the trade believed that field prices probably would regain the ground lost because the peak of the consuming is at hand and as a result there would be little or no fluctuation of Gulf prices.

Wax Markets

Prices Drop 0.125 Cent

NEW YORK, Nov. 23.—Results of an inactive market were seen in lower prices for white crude scale at the close of the past week. Demand from both foreign and domestic buyers was very quiet, the trade reported. Prices of fully refined grades were unchanged and demand was light.

White crude scale was quoted at 3.125 to 3.375 cents Saturday, compared with quotations and a few sales at 3.25 to 3.50 cents the previous week. Yellow goods were quoted at 3 to 3.125 cents, a decrease of 0.25 cent between the low range of last week and the high of the week before.

One seller disposed of a car of white crude scale the past week for domestic shipment at 3.35 cents, the highest priced sale reported. Some bids of 3.05 cents from domestic users were received at New York and it was reported that a Baltimore seller sold a small order at that figure.

No sales of yellow goods were reported although some bids were received which were lower than quoted prices. The reduction was largely in sympathy with white crude scale, sellers reported.

Several suppliers have said that the present situation was due to general business conditions both in America and abroad. Prices are not expected to decline appreciably from present levels and a resumption of active buying is anticipated next month.

Gulf Coast Lubes Quiet

HOUSTON, Nov. 25.—Gulf Coastal lubricant markets had reached another quiet stage throughout the past week. Domestic jobber demand was reported fair but lacked zest. Manufacturers continued sticking closer to list prices. Shading was only slightly in evidence and then only on individual grades where the manufacturer was "long" on stocks.

Correction

On page 42 of the Nov. 13, 1929 issue, under the "Our Industry" heading, a typographical error made the price of "Geologic Structures," McGraw-Hill Book Co., read $14 instead of $4, the correct amount. The book, a second edition of the volume of the same name, was revised and enlarged by Dr. Bailey Willis, professor emeritus of geology of Stanford University, Palo Alto, and his son, Robin Willis, co-author.

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Eastern Domestic Market

(Prices for tank car lots, f. o. b. refinery or seaboard terminal, representing majority of quotations.)

U. S. MOTOR GASOLINE	Nov. 25	Nov. 18	Nov. 11
New York harbor	8.75	8.75	8.75
Portland district	*10.75	*10.75	*10.75
Boston district	*10.25	*10.25	*10.25
Providence district	*10.25	*10.25	*10.25
Philadelphia district	8.75 – 9.00	8.75 – 9.00	9.00
Baltimore district	9.00	9.00	9.00
Norfolk district	9.00	9.00	9.00
Charleston district	9.00	9.00	9.00
Savannah district	9.00	9.00	9.00
Jacksonville district	9.00	9.00	9.00
CALIFORNIA, U. S. MOTOR GASOLINE			
New York harbor	9.00	9.00	9.00
Philadelphia district	9.00	9.00	9.00
Baltimore district	9.00	9.00	9.00
WATER WHITE KEROSENE			
New York harbor	7.75	7.75	7.75
Philadelphia district	7.75 – 8.00	7.75 – 8.00	7.75 – 8.00
Baltimore district	7.75	7.75	7.75
GAS OIL: 28-34 Gravity			
New York harbor	4.75	4.75	4.75
Boston district	4.75 – 5.00	4.75	4.75
FURNACE OIL: 36-40 Gravity			
New York harbor	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50
Boston district	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50
GRADE C BUNKER OIL†			
New York harbor	$1.05	$1.05	$1.05
Boston district	$1.05	$1.05	$1.05
DIESEL OIL			
New York harbor	$2.00 –$2.10	$2.00 –$2.10	$2.00 –$2.10
MEDICINAL OILS, RUSSIAN			
.885-890 s.g. 320-330 vis.	$0.82 –$0.97	$0.82 –$0.97	$0.82 – 0.97
.870-875 s.g. 145-155 vis.	$0.74 –$0.89	$0.74 – 0.89	$0.74 – 0.89

Note: Above gasoline prices do not include inspection tax levied in some states
*Minimum delivered. †Lighterage 5c per bbl. additional.

New York Export Market

(Lubricating oils are per gal. in bbls.)

	Nov. 25	Nov. 18	Nov. 11
CYLINDER OILS (Pennsylvania Products)			
Bright stock, dark	53.00 –55.00	54.00 –57.00	54.00 –57.00
600 D filtered	42.00 –45.00	43.00 –46.00	44.00 –46.00
600 Warren E filtered	38.00 –41.00	39.00 –41.00	40.00 –41.00
600 s.r. unfiltered	33.00 –35.00	33.00 –35.00	33.00 –35.00
650 s.r. unfiltered	38.00 –40.00	38.00 –40.00	38.00 –40.00
600 flash, s.r.	40.00 –42.00	40.00 –42.00	41.00 –44.00
630 flash, s.r.	44.00 –46.00	44.00 –46.00	44.00 –46.00
RED ENGINE OILS (Vis. 100°)			
300 vis. No. 6½ color	20.00 –21.00	20.00 –21.00	20.00 –21.00
250 vis. No. 6 color	18.00 –20.00	18.00 –20.00	18.00 –20.00
200 vis. No. 6 color	16.00 –17.00	16.00 –17.00	16.00 –17.00
PALE ENGINE OILS (Vis. 100°)			
230 vis. No. 3¾ color	22.00 –24.00	22.00 –24.00	21.00 –22.00
180 vis. No. 3¼ color	18.00 –20.00	18.00 –20.00	17.00 –18.00
100 vis. No. 2¼ color	16.00	16.00	16.00
MOTOR OILS (Vis. 100°)			
600 vis. No. 7 color	30.00 –32.00	30.00 –32.00	30.00 –32.00
500 vis. No. 6½ color	28.00 –29.00	28.00 –29.00	28.00 –29.00
400 vis. No. 7¼ color	26.00 –27.00	26.00 –27.00	26.00 –27.00
300 vis. No. 6 color	23.00 –24.00	23.00 –24.00	23.00 –24.00
200 vis. No. 6 color	21.00 –22.00	21.00 –22.00	21.00 –22.00
MEDICINAL OILS			
.875-880 s.g.	$0.76 –$0.91	$0.76 –$0.91	$0.76 – 0.91
.860-.865 s.g.	$0.58 –$0.73	$0.58 –$0.73	$0.58 – 0.73
WAXES (In cents per pound, f.a.s. carload lots)			
WHITE CRUDE SCALE (In barrels)			
122-124 A.m.p.	3.125– 3.375	3.25 – 3.50	3.25 – 3.50
124-126 A.m.p.	3.125– 3.375	3.25 – 3.50	3.25 – 3.50
FULLY REFINED (In burlap bags)			
123-125 A.m.p. Phila.	4.125– 4.25	4.125– 4.25	4.125– 4.25
125-127 A.m.p.	4.25 – 4.375	4.25 – 4.375	4.25 – 4.375
128-130 A.m.p.	4.50 – 4.625	4.50 – 4.625	4.50 – 4.625
130-132 A.m.p.	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25
133-135 A.m.p.	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00
135-137 A.m.p.	6.25 – 6.375	6.25 – 6.375	6.25 – 6.375
YELLOW CRUDE SCALE			
124-126 A.m.p.	3.00 – 3.125	3.125– 3.25	3.125– 3.25

Gulf Export Market

(Prices are f. o. b. Gulf oil terminals in Texas and Louisiana, shipments of 20,000 bbls. or more unless otherwise noted and for export shipment only).

GASOLINE	Nov. 25	Nov. 18	Nov. 11
U. S. Motor	8.50	8.50	8.50
60-62, 400 e.p.	9.50	9.50	9.50
61-63, 390 e.p.	9.75	9.75	9.75
64-66, 375 e.p.	10.00	10.00	10.00
U. S. Motor, cases (cargoes)	$1.85	$1.85	$1.85
64-66, cases (cargoes)	$2.00	$2.00	$2.00
KEROSENE			
44 water white	8.00	8.00	8.00
41-43 prime white	7.00	7.00	7.00
Water white, cases (cargoes)	$1.80	$1.80	$1.80
Prime white, cases (cargoes)	$1.70	$1.70	$1.70
DOMESTIC GAS & BUNKER OILS			
*26-30 translucent gas oil	4.00	4.00	4.00
*30 plus translucent gas oil	4.00 – 4.25	4.00 – 4.25	4.00 – 4.25
Grade C bunker oil	$0.95	$0.95	$0.95
Grade C bunker oil, cargoes	$0.70 –$0.75	$0.70 –$0.75	$0.70 –$0.75
*Less than ½ of 1% sulphur.			
MEXICAN CRUDE AND BUNKER OILS (F. O. B. Steamer, Tampico)			
Heavy Panuco crude taxes to be paid	$0.60 –$0.65	$0.60 –$0.65	$0.60 –$0.65
Grade C bunker oil for bunkering purposes, taxes paid	$0.90 –$0.95	$0.90 –$0.95	$0.90 –$0.95
SOUTH TEXAS LUBRICATING OILS, (Viscosity at 100°F. cold test 0. Tanker, f. o. b. Houston)			
100 vis. No. 2 unfiltered pale	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50
200 vis. No. 3 unfiltered pale	8.25 – 9.00	8.25 – 9.00	8.25 – 9.00
300 vis. No. 3 unfiltered pale	9.75 –10.00	9.75 –10.00	9.75 –10.00
500 vis. No. 3½ unfiltered pale	11.25 –11.50	11.25 –11.50	11.25 –11.50
750 vis. No. 4 unfiltered pale	12.50 –13.00	12.50 –13.00	12.75 –13.00
1200 vis. No. 5 unfiltered pale	16.25 –16.50	16.25 –16.50	16.25 –16.50
200 vis. No. 5-6 red oil	7.00 – 8.00	7.00 – 8.00	7.00 – 8.00
300 vis. No. 5-6 red oil	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
500 vis. No. 5-6 red oil	9.25 –10.00	9.25 –10.00	9.25 –10.00
750 vis. No. 5-6 red oil	11.00 –12.00	11.00 –12.00	11.00 –12.00
1200 vis. No. 5-6 red oil	15.00 –16.00	15.00 –16.00	15.50 –16.50

Gulf Domestic Market

(Prices are f.o.b. Gulf oil terminals in Texas and Louisiana in shipment of 20,000 bbls. or more, representing sellers' opinions, for domestic shipment only).

	Nov. 25	Nov. 18	Nov. 11
U. S. Motor gasoline	7.50	7.50	7.50
41-43 w.w. kerosene	6.375– 6.50	6.375– 6.50	6.375– 6.50
*26-32 translucent gas oil	4.00 – 4.125	4.00 – 4.125	4.00 – 4.125
*Less than ½ of 1% sulphur.			

Pacific Export Market

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

	Nov. 25	Nov. 18	Nov. 11
Gasoline, U. S. Motor, 53-55 Gravity	6.25 – 7.00	6.25 – 7.00	6.25 – 7.00
Gasoline, U. S. Motor-blends and special cuts	7.25 –10.00	7.25 –10.00	7.25 –10.00
Gas Oil, 30-34, per barrel	$0.80 –$1.00	$0.85 –$1.00	$0.85 –$1.00
Diesel Oil, 27 plus, per barrel	$0.80 –$1.00	$0.875–$1.00	$0.875–$1.00
Bunker oil, 14-18, per barrel	$0.70 –$0.85	$0.70 –$0.85	$0.70 –$0.85
Fuel oil, 14-18 per barrel	$0.60 –$0.85	$0.60 –$0.85	$0.60 –$0.85
Kerosene, 38-40 w.w., 125-150 flash, per gal.	5.50 – 6.25	5.75 – 6.25	5.75 – 6.25
Cased Goods			
Gasoline, U. S. Motor	$1.75 –$1.85	$1.75 –$1.85	$1.75 –$1.85
Kerosene, 38-40 w.w., 125, 150 flash	$1.45 –$1.50	$1.45 –$1.50	$1.45 –$1.50

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 pounds, British sterling; to American ports, cents per barrel.)

	Nov. 25 Crude &/or Fuel	Refined Oil &/or Spirits
Calif. to U. K. or Continental ports*	40	43–45
Gulf to U. K. or Continental ports*	25–27	30
North Atlantic to U. K. or Continental ports*	23–25	27
Calif. to North Atlantic ports (not E. of N. Y.)	$1.10	$1.05
Gulf to North Atlantic ports (not E. of N. Y.)**	40–42	41–43

*Continental ports in the range between Bordeaux and Hamburg, both inclusive.
**Venezuela loading same rate. For Tampico 3c per bbl. additional.

HE WILL THANK YOU FOR THIS SERVICE

Lost gas tank cap—you discover the loss—the customer expects to get a replacement cap from you. Why should he shop around for it?

Have Monmouth Caps ready for emergencies like this, and you'll make new friends. It's a service motorists appreciate—you save them time and trouble.

And best of all it costs you little in investment, nothing at all in time—and there's a worthwhile profit in every replacement.

An attractive display board—with a cap to fit every car, is your silent salesman.

Monmouth Caps are leak-proof, rattle-proof and can't get lost. On or off with a 1/8 turn.

Made and sold by
THE EATON BUMPER AND SPRING SERVICE COMPANY, *Cleveland, Ohio*
Branches: Atlanta, Boston, Chicago, Cleveland Dallas, Denver, Kansas City, Philadelphia

Fit every car
Never get lost
Can't rattle
Go on easily
Come off quickly
Leak-proof

Tank Wagon Service Station Markets for Gasoline and Kerosene

(OIL PRICE HANDBOOK has t. w. and s. s. markets for a whole year, arranged for quick reference)

These Prices in Effect Nov. 25, 1929, as Posted by Principal Marketing Companies

S.O. NEW JERSEY TERRITORY

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
Atlantic City, N. J.	14	2	16	18	13
Newark, N. J.	15	2	17	19	13
Annapolis, Md.	16	4	20	22	13
Baltimore, Md.	15	4	19	21	12
Cumberland, Md.	16	4	20	22	13
Washington, D. C.	15	2	17	19	12
Danville, Va.	16	5	21	23	12
Norfolk, Va.	15	5	20	22	13
Richmond, Va.	15	5	20	22	13
Roanoke, Va.	16	5	21	23	13
Petersburg, Va.	16	5	21	23	13
Charleston, W. Va.	15	4	19	21	13
Keyser, W. Va.	16	4	20	22	13
Parkersburg, W. Va.	15	4	19	21	12
Wheeling, W. Va.	16	4	20	22	13
Charlotte, N. C.	14	5	19	21	13
Hickory, N. C.	16	5	21	23	13
Mt. Airy, N. C.	16	5	21	23	13
Salisbury, N. C.	14	5	19	21	13
Charleston, S. C.	15	6	21	23	13
Columbia, S. C.	16	6	22	24	13

Note: 2c per gallon discount off t.w. price of gasoline to dealers and commercial consumers thru S. O. New Jersey territory.

CONTINENTAL OIL

Denver, Colo.	14	4	18	21	15.5
Pueblo, Colo.	14	4	18	21	15.5
Grand Junc., Colo.	18.5	4	22.5	25.5	19
Casper, Wyo.	16	4	20	23	14
Cheyenne, Wyo.	17	4	21	24	15.5
Butte, Mont.	20.5	5	25.5	28.5	20
Helena, Mont.	20.5	5	25.5	28.5	20
Salt Lake City, Utah	17.5	3½	21	24	17
Boise, Ida.	19.5	4	23.5	26.5	19
Twin Falls, Ida.	19.5	4	23.5	27.5	19
Albuquerque, N. M.	16	5	21	24	17

S. O. CALIFORNIA

Phoenix, Ariz.	14	4	18	22	20
Los Angeles, Cal.	16.5	3	19.5	22.5	15.5
Fresno, Cal.	17	3	20	23	17
San Francisco, Cal.	17	3	20	23	15.5
Reno, Nev.	21	4	25	28	19
Portland, Ore.	17.5	3	20.5	23.5	16.5
Seattle, Wash.	17.5	3	20.5	23.5	16.5
Spokane, Wash.	21.5	3	24.5	27.5	20.5
Tacoma, Wash.	17.5	3	20.5	23.5	16.5

Note: 4c per gal. discount to dealers off t.w. price of gasoline to customers taking tank truck delivery, thru S. O. California territory except 1c discount at Phoenix to dealers only.

S. O. LOUISIANA

Little Rock, Ark.	14	5	19	21	13
Alexandria, La.	‡15	4	‡19	21	†16
Baton Rouge, La.	14	4	18	20	†14.5
Lake Charles, La.	††16.5	4	††20.5	††22.5	†16
New Orleans, La.	*11	4	*15	15	†13
Shreveport, La.	15.5	4	19.5	21.5	†15
Lafayette, La.	**16	4	**20	**22	†14
Bristol, Tenn.	16	5	21	22	14
Chattanooga, Tenn.	15	5	20	20	14
Knoxville, Tenn.	15	5	20	22	16
Nashville, Tenn.	14	5	19	19	16
Memphis, Tenn.	15	5	20	22	12.5

Note: 2c per gallon discount off t.w. price of gasoline to dealers thru S. O. Louisiana territory.

*New Orleans gasoline prices include 1c parish tax in addition to 4c state tax, and kerosene prices include 1c state tax and 1c parish tax.

†Kerosene price in Louisiana includes 1c state tax.

**Lafayette gasoline prices include 1c parish tax in addition to 4c state tax.

††Lake Charles gasoline prices include 1c parish tax.

‡Alexandria gasoline prices include 1c parish tax.

S. O. KENTUCKY

Ashland, Ky.	13	5	18	19	15.5
Catlettsburg, Ky.	13	5	18	19	15.5
Lexington, Ky.	15	5	20	22	15.5
Louisville, Ky.	16	5	21	23	13
Covington, Ky.	15	5	20	21	15.5
Clarksdale, Miss.	13	5	18	20	12.5
Gulfport, Miss.††	17.5	5	22.5	24.5	14
Jackson, Miss.	16	5	21	23	13
Natchez, Miss.	15.5	5	20.5	20.5	14
Vicksburg, Miss.	15.5	5	20.5	22.5	14

Latest Changes in Tank Wagon Prices

Gasoline Changes

S. O. Kentucky—T.w. and s.s. gasoline cut 2c, Birmingham, to 17c and 19c respectively, **Nov. 23.**

T.w. and s.s. cut 2c, Montgomery, to 19c and 21c respectively, including 4c tax, **Nov. 23.**

T.w. and s.s. cut 2c, Macon, to 21c and 23c respectively, including 6c tax, **Nov. 21.**

S. O. Indiana—S.s. only up 2c, Madison, to 19.3c, **Nov. 17.** T.w. unchanged at 18.3c, including 2c tax.

Kerosene Changes

S. O. California—Kerosene cut ½c, Phoenix, to 20c t.w., **Oct. 1.**

Canada—Kerosene cut 1c, Ft. William, to 22½c; up ½c, Montreal, Quebec City and Three Rivers to 21½c, 22½c and 22½c respectively, Nov. 21.

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
Birmingham, Ala.	13	4	17	19	13
Mobile, Ala.‡	14	4	18	20	15
Montgomery, Ala.*	15	4	19	21	16.5
Atlanta, Ga.	14	6	20	22	†16.5
Augusta, Ga.	14	6	20	22	†15.5
Macon, Ga.	15	6	21	23	†16.5
Savannah, Ga.	16	6	22	24	†15.5
Jacksonville, Fla.	16	6	22	24	14.5
Miami, Fla.	17	6	23	25	15.5
Tampa, Fla.	16	6	22	24	14.5
Pensacola, Fla.**	12	6	18	20	14.5

Note: Net price of gasoline to dealers is 2c under posted t.w. price thru S. O. Kentucky territory.

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosene at Montgomery included. ‡Mobile gasoline prices include 1c city tax

†Georgia kerosene prices include 1c state tax.

**Both tank wagon prices include 1c city tax at Pensacola which went into effect Oct. 15, 1926.

††Both tank wagon prices at Gulfport include Harrison county privilege tax of 2c.

S. O. NEBRASKA

Omaha, Neb.	16.25	4	20.25	22.25	13.25
McCook	17.75	4	21.75	23.75	14.75
Norfolk	16.75	4	20.75	22.75	13.75
North Platte	17.75	4	21.75	23.75	14.50
Scottsbluff	17.75	4	21.75	23.75	14.25

S. O. INDIANA

Chicago, Ill.	14	3	17	18	13
Decatur, Ill.	16.2	3	19.2	20.2	13.1
E. St. Louis, Ill.	12.4	3	15.4	15.4	12.2
Joliet, Ill.	16.4	3	19.4	20.4	13.3
Peoria, Ill.	16.2	3	19.2	20.2	13.1
Quincy, Ill.	16.2	3	19.2	20.2	12.9
Indianapolis, Ind.	16.2	4	20.2	21.2	14.2
Evansville, Ind.	16	4	20	21	14
South Bend, Ind.	16.4	4	20.4	21.4	14.4
Detroit, Mich.	16.8	3	19.8	20.8	14.7
Grand Rapids, Mich.	16.7	3	19.7	20.7	14.6
Saginaw, Mich.	16.9	3	19.9	20.9	14.8
Green Bay, Wisc.	16.6	2	18.6	19.6	13.4
Madison, Wisc.	16.3	2	18.3	19.3	13.1
Milwaukee, Wisc.	16.1	2	18.1	19.1	12.9
La Cross, Wisc.	17.2	2	19.2	20.2	14
Minneapolis, Minn.	17.2	3	20.2	21.2	13.9

	Gasoline				Oil
	T.W.	Tax	Total T.W.	S.S.	T.W.
Duluth, Minn.	17.5	3	20.5	21.5	13.9
Mankato, Minn.	17.1	3	20.1	21.1	13.7
Des Moines, Ia.	16.5	3	19.5	20.5	13.3
Davenport, Ia.	16.5	3	19.5	20.5	13.3
Sioux City, Ia.	16.1	3	19.1	20.1	12.9
Mason City, Ia.	16.5	3	19.5	20.5	13.3
St. Louis, Mo.	*15.9	2	17.9	18.9	12.3
Kansas City, Mo.	†16.9	2	18.9	19.9	11.6
St. Joseph, Mo.	†16.5	2	18.5	19.5	12.2
Fargo, N. D.	18.9	3	21.9	22.9	15.9
Grand Forks, N. D.	19.2	3	22.2	23.2	16.2
Minot, N. D.	18.9	3	21.9	22.9	15.9
Pierre, S. D.	17	4	21	22	14.4
Huron, S. D.	17.3	4	21.3	22.3	14.7
Wichita, Kans.	14.8	3	17.8	18.8	11.8
Bartlesville, Okla.	14.5	4	18.5	19.5	11.5

S. O. Indiana's quantity contract price schedule thru territory except Chicago on tank truck deliveries of gasoline, figured from the service station price, is 2c for 500 gals. or more a month; 2½c for 2000 gals. or more a month and 3c for 6000 gals. or more a month.

In Chicago and vicinity, these discounts apply. Over 500 gals. per month, 2c per gal. off service station price; over 1,000 gals. per month, 4c per gal. off service station price.

*Includes city tax of ½c

†Includes city tax of 1c.

S. O. OHIO

Ohio state-wide.	15	4	19	20	13
Columbiana, Jackson, Meigs, Vinton, Washington, Stark, Gallia and Darke, Counties and *15 competitive pts.	14	4	18	18	13
At †6 Competitive Points	14	4	19	18	13
Van Buren.	15	4	19	19	13
Bryan and Findlay.	13	4	17	17	13
Payne.	11	4	15	15	13

Note: Discount to dealers and commercial accounts generally thru Ohio is 2c per gal. off t.w. price with some exceptions.

†These 6 points are: Hicksville, Arlington, Midway, Mortimer, Mendon and Nevada.

*These 15 points are: Arcadia, Perrysburg, Fostoria, Urbana, Marion, St. Paris, Hamilton, Meeker, Ney, Miller City, Cortland, Bradford, Coolville, Lima and Piqua.

MAGNOLIA PETROLEUM

Muskogee, Okla.	12	4	16	19	13
Oklahoma City.	13	4	17	20	10
Tulsa, Okla.	11	4	15	19	10
Fort Smith, Ark.†	11	†4	15	17	12
Little Rock, Ark.	14	5	19	21	13
Texarkana, Ark.*	13	*4	17	19	12
Dallas, Tex.	13	4	17	21	13
Fort Worth, Tex.	13	4	17	20	12
Houston, Tex.	9	4	13	17	11
San Antonio, Tex.	11	4	15	19	11
El Paso, Tex.	11	4	15	18	16

*Within city of Texarkana, the state tax on gasoline is 4c per gal. conforming with the Texas state tax. In this district outside of the city the 5c Arkansas tax applies.

†Within city of Fort Smith, Oklahoma tax of 4c applies. In this district outside of the city, the 5c Arkansas tax applies.

S. O. NEW YORK

Due to local price conditions at many points in S. O. New York territory, actual prices on both gasoline and kerosene are being made at under the posted tank wagon prices published below.

Greater New York City:					
Boroughs of Manhattan, Bronx, Queens & Kings.	14	2	16	18	15
Borough of Richmond.	15	2	17	19	15
Albany, N. Y.	16	2	18	20	15
Buffalo, N. Y.	16	2	18	20	14
Rochester, N. Y.	16	2	18	20	13
Syracuse, N. Y.	16	2	18	20	15
Boston, Mass.	16	2	18	20	15

Above prices include these inspection fees on both gasoline and kerosene, per gallon: Alabama, 1/40c on gasoline, 1/2c kerosene; Arkansas, 1/20c on both; Florida, 1/8c on both; Georgia, 1/10c on both; Indiana, 4/25c to 1/2c on both; Kansas, 3/50c on both; Louisiana, 1/32c on gasoline; Minnesota, 3/50c on both; Missouri, 3/10c to 1/2c on both; Nebraska, 3/50c to 1/2c on both; North Carolina, 1/4c on both; North Dakota, 1/20c on both; Oklahoma, 4/25c on both; South Carolina, 1/8c on both; South Dakota, 1/10c on both; Tennessee, 2/5c on gasoline and 1/2c to 4/5c on kerosene; Wisconsin, 3/50c on both.

Kerosene inspection fees only, per gallon; Iowa, 7/100c; Michigan 1/5c to 4/5c per gal.

In Illinois, cities and villages have the power to appoint oil inspectors and fix inspection fees which is done in some instances. In some cases in the above state or other states there are local inspection fees.

Tank Wagon, Service Station Markets for Gasoline and Kerosene

Prices in Effect Nov. 25, 1929

S. O. NEW YORK

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W
Augusta, Me.	16	4	20	20	15
Manchester, N. H.	16	4	20	22	15
Burlington, Vt.	16	4	20	22	15

Note: S. O. New York allows concessions of 1 to 2c per gal. to dealers under posted tank wagon prices.

*The Standard of New York does not operate stations in New York City. This figure is the retail price of a principal station operator in New York selling Socony gasoline.

ATLANTIC REFINING

Pittsburgh, Pa.	15	*	15	21	13
Philadelphia, Pa.	15	*	15	21	13
Allentown, Pa.	15	*	15	21	13
Erie, Pa.	15	*	15	19	13
Scranton, Pa.	15	*	15	21	13
Altoona, Pa.	15	*	15	21	13
Williamsport, Pa.	14	*	14	18	13
Dover, Del.	15	3	18	20	13
Wilmington, Del.	15	3	18	20	13
Boston, Mass.	16	2	18	20	15
Springfield, Mass.	16	2	18	20	15
Worcester, Mass.	16	2	18	20	15
Fall River, Mass.	16	2	18	20	13
Providence, R I.	16	2	18	20	13
Hartford, Conn.	16	2	18	20	15
New Haven, Conn.	16	2	18	20	15
Atlantic City, N. J.	14	2	16	18	13
Camden, N. J.	15	2	17	19	13
Trenton, N. J.	15	2	17	19	13
Annapolis, Md.	16	4	20	22	13
Baltimore, Md.	15	4	19	21	12
Hagerstown, Md.	14	4	18	18	12
Richmond, Va.	15	5	20	22	13
Wilmington, N. C.	15	5	20	22	13
Brunswick, Ga.	16	6	22	24	**16.5
Jacksonville, Fla.	16	6	22	24	14.5

Note: 2c per gal. discount off t.w. price of gasoline on sales to dealers; discount to commercial accounts under contract for one year in accordance with Code of Ethics.

*4-cent state tax is collected by retail dealer and paid by him d rectly to state.

**Georgia kerosene prices include 1c state tax.

V. M. & P. NAPHTHA

(Changes ordinarily occur coincident with gasoline price changes)

	Oleum Spirits	V.M.&P. Naphtha	Cleaner Naphtha
Chicago	15.7	17.2	19
Detroit	17.4	18.9	20.7
Kansas City	†15.9	†17.4	†19.2
Milwaukee	16.4	*19.9	*21.7
Minneapolis	**19.7	**21.2	*23
St. Louis	15.6	17.1	18.9
New York		16	23
Boston		19	23

*Includes 2c state tax. †Includes 1c city tax.
**Includes 3c state tax.

Petroleum Spirits

Tank Cars (Solvent)	
New York refineries	11.50–12.00
Philadelphia refineries	11.50–12.00
Tank Wagon or Steel Barrels	
New York City	16–18
New England	18–19
New Jersey	16–18
Pennsylvania	16–19

Note: 2c off above t.w. prices to large buyers in some instances.

CANADA

(Per Imperial Gallon, which is 1.2 American Gallons)

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
ONTARIO					
Toronto	19.5	5	24.5	28	20.5
Ottawa	16.5	5	21.5	25	20.5
Cochrane	24.5	5	29.5	..	25.5
Ft. William	22.5	5	27.5	31	22.5
Border Cities, including Windsor	18.5	5	23.5	27	19.5
MANITOBA					
Winnipeg	21.5	3	24.5	28	21.5
SASKATCHEWAN					
Regina	26	3	29	33	26
ALBERTA					
Edmonton	27.5	5	32.5	36	27.5
Calgary	23.5	5	28.5	32	23.5
BRITISH COLUMBIA					
Vancouver	23	3	26	30	24
QUEBEC					
Montreal	20.5	5	25.5	29	21.5
Quebec City	21.5	5	26.5	30	22.5
Three Rivers	21.5	5	26.5	30	22.5
NEW BRUNSWICK					
St. John	22	5	27	31	24
Moncton	22	5	27	31	24
NOVA SCOTIA					
Halifax	22	5	27	31	24
Sydney	22	5	27	31	24
PRINCE EDWARD ISLAND					
Charlottetown	22	5	27	31	24

Note: In districts surrounding these points 1c additional is added to city price.

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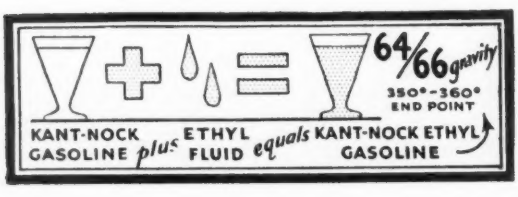

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Crude Oil Prices (in Effect Nov. 25, 1929)

(Crude prices for the whole year in OIL PRICE HANDBOOK published annually)

EASTERN FIELDS

(All Penna. Crude prices effective Oct. 1, 1929)

(Posted by Joseph Seep Purchasing Agency)

Penna. Grade Oil in New York Transit Lines (Alleghany, N. Y. District) *$3.05

Bradford District Oil in National Transit Lines (Bradford District) *3.05

Penna. Grade Oil in National Transit Lines (Other Pennsylvania) *3.05

Penna. Grade Oil in Southwest Penna. Pipe Lines (Other Pennsylvania) 3.00

Penna. Grade Oil in Eureka Pipe Lines (West Virginia) 2.90

Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O. district) 2.70

Corning Grade in Buckeye Pipe Lines (Ohio) (Effective May 22, 1929) 1.90

Corning, O., heavy grade (Effective May 22, 1929) 1.80

Somerset Oil in Cumberland Pipe Lines (Kentucky) (Effective Nov. 12, 1929) 1.55

Somerset Oil in Eureka Pipe Lines (Effective Nov. 12, 1929) 1.29

Ragland Grade in Cumberland Pipe Lines (Kentucky) (Effective Jan. 29, 1929) $0.60

***Oil run prior to July 1, 1929 is $3.00 per bbl.**

(Posted by Stoll Oil Refining Co.)

Oil City, Ky., oil in Stoll lines (Effective Oct. 7, 1929) $1.70

MICHIGAN

(Posted by Dixie Oil Co.)

Traverse and Dundee (Muskegon):

32-32.9	$1.25	39-39.9	$1.60
33-33.9	1.30	40-40.9	1.65
34-34.9	1.35	41-41.9	1.70
35-35.9	1.40	42-42.9	1.75
36-36.9	1.45	43-43.9	1.80
37-37.9	1.50	44 and above	1.85
38-38.9	1.55		

(Posted by Pure Oil Co.)

Midland, Midland County $1.70

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

Effective May 21, 1929

Wooster	$1.90	Princeton	$1.75
Lima	1.80	Illinois	1.75
Waterloo	1.20	Plymouth	1.28
Indiana	1.57	West Kentucky	1.68

CANADIAN CRUDE

Posted by Imperial Oil Refineries, Ltd.

Petrolia $2.20

Oil Springs 2.27

OKLAHOMA, KANSAS and NORTH TEXAS

Prices of Paririe Oil & Gas Co.

(In Oklahoma, Kansas, North and East Central Texas)

Effective May 20, 1929

Below 25	$0.85	35-35.9	$1.40
25-25.9	0.90	36-36.9	1.45
26-26.9	0.95	37-37.9	1.50
27-27.9	1.00	38-38.9	1.55
28-28.9	1.05	39-39.9	1.60
29-29.9	1.10	40-40.9	1.65
30-30.9	1.15	41-41.9	1.70
31-31.9	1.20	42-42.9	1.75
32-32.9	1.25	43-43.9	1.80
33-33.9	1.30	44 and above	1.85
34-34.9	1.35		

Humble Oil & Refining Co. Prices

(Ranger, North Texas, Mexia, Powell, Boggy Creek, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona crudes all in Texas.)

May 20, 1929, same schedule as Prairie in above fields.

Magnolia Petroleum Co.

(In Oklahoma, Kansas and North and East Central Texas)

May 20, 1929, Magnolia posted in above fields and in Panola Co., same schedule as Prairie, except these grades:

Below 26	$0.70	29-29.9	0.95
26-26.9	0.75	30-30.9	1.05
27-27.9	0.85	31-31.9	1.15
28-28.9	0.90		

May 20, 1929, Glasscock, Crane, Upton, Winkler, Howard and Mitchell Counties same prices as Humble's postings in West Texas which see.

Iatan district $0.93

Corsicana heavy 0.80

Luling 0.90

Mirando 0.90

Carter Oil Co.

(Oklahoma and Kansas)

May 20, 1929, same schedule as Prairie except Carter does not post oil below 25.

PANHANDLE, TEXAS

Humble Oil & Refining Co.

Effective May 20, 1929

Hutchinson and Carson Counties:

Below 32	$0.90	38-38.9	$1.25
32-32.9	0.95	39-39.9	1.30
33-33.9	1.00	40-40.9	1.35
34-34.9	1.05	41-41.9	1.40
35-35.9	1.10	42-42.9	1.45
36-36.9	1.15	43-43.9	1.50
37-37.9	1.20	44 and above	1.55

Wheeler County:

Below 30	$0.90	37-37.9	$1.30
30-30.9	0.95	38-38.9	1.35
31-31.9	1.00	39-39.9	1.40
32-32.9	1.05	40-40.9	1.45
33-33.9	1.10	41-41.9	1.50
34-34.9	1.15	42-42.9	1.55
35-35.9	1.20	43-43.9	1.60
36-36.9	1.25	44 and above	1.65

Gray County:

Below 29	$0.90	37-37.9	$1.35
29-29.9	0.95	38-38.9	1.40
30-30.9	1.00	39-39.9	1.45
31-31.9	1.05	40-40.9	1.50
32-32.9	1.10	41-41.9	1.55
33-33.9	1.15	42-42.9	1.60
34-34.9	1.20	43-43.9	1.65
35-35.9	1.25	44 and above	1.70
36-36.9	1.30		

Above prices met by The Texas Co. and Magnolia on May 20.

WEST TEXAS

Humble Oil & Refining Co.

Effective May 20, 1929

Winkler, Crane, Upton, Crockett, Howard and Pecos Counties, also Lea County, N. Mex.

Below 25	$0.70	25-25.9	$0.74
26-26.9	0.78	32-32.9	$1.02
27-27.9	0.82	33-33.9	1.06
28-28.9	0.86	34-34.9	1.10
29-29.9	0.90	35-35.9	1.14
30-30.9	0.94	36 and above	1.18
31-31.9	0.98		

May 20, 1929, The Texas Co. posted same prices as Humble in Crane, Upton, Pecos and Winkler., and Magnolia in Crane, Upton, Winkler, Glasscock, Howard and Mitchell.

SOUTHWEST TEXAS

(Posted by Humble Oil & Refining Co.)

Effective May 20, 1929

Mirando $0.90

Salt Flat 1.25

NORTH LOUISIANA—ARKANSAS FIELDS

Prices of Standard Oil Co. of Louisiana

Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton, De Soto and **Cotton Valley.

Effective May 22, 1929

Below 28	$1.00	36-36.9	$1.45
28-28.9	1.05	37-37.9	1.50
29-29.9	1.10	38-38.9	1.55
30-30.9	1.15	39-39.9	1.60
31-31.9	1.20	40-40.9	1.65
32-32.9	1.25	41-41.9	1.70
33-33.9	1.30	42-42.9	1.75
34-34.9	1.35	43-43.9	1.80
35-35.9	1.40	44 and above	1.85

**Cotton Valley, below 36, $0.85. Beginning with 36-36.9, same schedule as above.

Smackover, below 24 ..... $0.85

do 24 and above 1.00

Bellevue 1.30

*Urania, La 1.10

†East El Dorado 0.75

*Posted by Louisiana Oil Refining Corp.

†Posted by Magnolia Petroleum Co.

May 20, The Texas Co. same schedule in Louisiana as Standard, plus these grades: 24-24.9, $0.85; 25-25.9, $0.90; 26-26.9, $0.95; 27-27.9, $1.00.

May 22, Magnolia, Atlantic, Shreveport-Eldorado Pipe Line, Louisiana Oil, and Gulf Companies met Standard schedule in Louisiana-Arkansas fields.

STEPHENS, ARKANSAS

Louisiana Oil Refining Corp., and Atlantic Oil Producing Co.

Effective May 22, 1929

Below 28	$0.90	30-30.9	$1.02
28-28.9	0.94	31-31.9	1.06
29-29.9	0.98	32 and above	1.10

GULF COASTAL

Posted by Humble Oil & Refining Co.

Effective May 20, 1929

Grades A	$1.30	29-29.9	$1.30
Grades B:		30-30.9	1.33
Below 25	$1.15	31-31.9	1.36
25-25.9	1.18	32-32.9	1.39
26-26.9	1.21	33-33.9	1.42
27-27.9	1.24	34-34.9	1.45
28-28.9	1.27	35 and above	1.48

Fields classified as A and B are Spindletop, Goose Creek, Hull, Liberty, Sour Lake, West Columbia, Orange, Boling, Pierce Junction, Sugarland and Raccoon Bend. All other fields are Grades A only

Slogan Contest Closes Dec. 31

CLEVELAND—The slogan contest being conducted by the Merco Nordstrom Valve Co. will close Dec. 31 according to an announcement by the company. Prizes totaling $500 have been offered by the company for a slogan not to exceed 10 words which will best describe the value of its valves. Any one may compete and send as many entries as desired.

Complete details on the contest may be obtained from the company at 343 Sansome St., San Francisco. Prizes offered are, $250, $100, $50, four $10 prizes and 12 $5 prizes.

PHOENIX, Ariz.—Valzona Oil Co., with headquarters here in the Heard Bldg., has been appointed Arizona distributor of the Valvoline Oil Co., manufacturer of Valvoline lubricating oils and greases.

Gulf Coastal Water Shipments—October Compared With September

(All figures in barrels of 42 gallons)

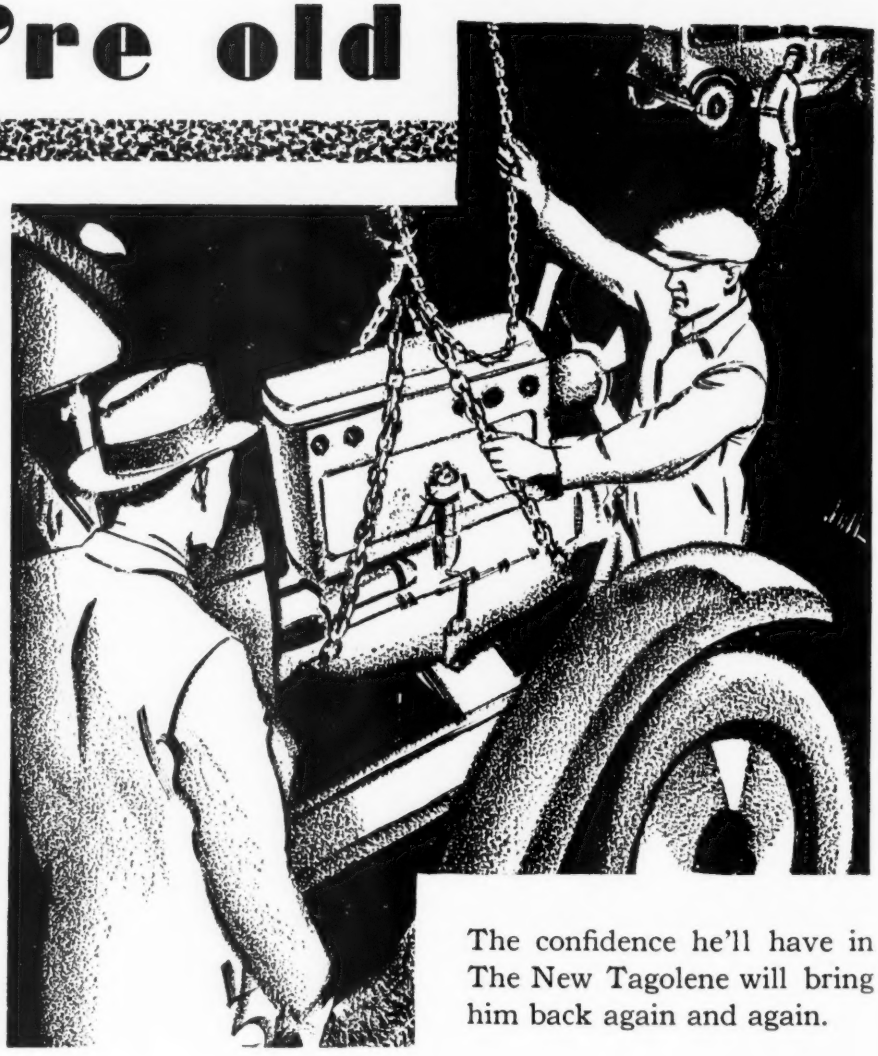
Company—Port	Coastwise Refined September	Coastwise Refined October	Export Refined September	Export Refined October
Standard of Louisiana, Baton Rouge	583,748.00	714,287.00	722,937.00	676,896.00
The Texas Company, Port Arthur	1,233,289.00	1,304,406.00	508,724.00	415,227.00
Gulf Refining Co., Port Arthur	2,124,455.50	2,695,029.25	122,491.00	100,046.12
Magnolia Petroleum Co., Beaumont	1,155,522.50	698,639.66	*	
Humble Oil & Rfg. Co., Baytown	2,002,034.48	1,265,720.60	1,872,544.03	1,874,680.98
Atlantic O. Prod. Co., Atreco	116,352.08	37,119.52		
Pure Oil Company, Smith's Bluff	472,488.61	461,545.62		
Deepwater Oil Refineries, Houston				45,000.00
TOTALS	7,687,899.17	7,146,747.65	3,226,696.03	3,111,850.10
	Coastwise Crude		**Export Crude**	
Standard of Louisiana, Baton Rouge	355,784.00	753,705.00	53,754.00	53,927.00
The Texas Company, Port Arthur				
Gulf Refining Co., Port Arthur	218,285.28	223,698.27		
Magnolia Petroleum Co., Beaumont	873,598.02	927,783.34		
Humble Oil & Rfg. Co., Texas City	832,969.00	894,572.00		
Ingleside	66,570.00	145,749.00		
Baytown	456,152.00	262,369.00		
Neches				
Harbor Island	1,630,955.00	1,352,918.00	301,338.00	513,327.00
Atlantic O. Prod. Co., Atreco	1,206,300.05	1,030,687.35		
Beaumont	143,753.45	158,286.34		
Smith's Bluff		37,510.54		
Pure Oil Company, Smith's Bluff	349,810.28	458,265.21		
Sun Oil Company, Sabine Pass	671,046.00	825,995.00		
TOTALS	6,805,223.08	7,071,539.05	355,092.00	567,254.00

*Magnolia Petroleum Company makes no distinction in reports between coastwise and export shipments.

It's all right to pull 'em if they're old

Quality Has No Substitute

SKELLY



"I tell you, I love fine machinery. And how I hate to 'pull' a motor like this that ought to be ready for another 10,000 miles. If everyone would use this new Tagolene—we wouldn't have trouble like this."

Mechanics know why motors wear out—and car owners are fast learning that a motor's life depends on good oil.

The New Tagolene makes a strong appeal to the pocketbooks of your customers, with added miles of wear. The repairman will not be needed until his car has given him tens of thousands of miles.

The confidence he'll have in The New Tagolene will bring him back again and again.

SKELLY OIL COMPANY

El Dorado, Kans. Tulsa.
Omaha Kansas City
Minneapolis

RADIO—Listen in Saturday evenings at 6:30 to the Skellodians over NBC network: WLS, Chicago; WHO, Des Moines; WOW, Omaha; KOA, Denver; KSD, St. Louis; WDAF, Kansas City; KVOO, Tulsa; KSTP, St. Paul-Minneapolis.

THE NEW

TAGOLENE

MOTOR OIL

MADE TO STAND ABUSE

30c
A QUART

Crude Oil Prices (in Effect Nov. 25, 1929)

(Crude Oil Prices for the whole year in OIL PRICE HANDBOOK published annually)

GULF COASTAL

Prices of The Texas Co.

Effective May 20, 1929

Grades A	$1.30	*Grades B	$1.15
‡Grades B (light crude):			
35–35.9	$1.49	40–40.9	$1.69
36–36.9	1.53	41–41.9	1.73
37–37.9	1.57	42–42.9	1.77
38–38.9	1.61	43–43.9	1.81
39–39.9	1.65	44 and above	1.85

*Grades B include all heavy crudes which do not meet tests for Grades A or for Gulf Coast light crude.

‡The Texas Co.'s gravity and price schedule on all oil below 35° is same as Humble's postings on Grades B.

ROCKY MOUNTAIN FIELDS

Prices of Ohio Oil Co., and Midwest Refining Co.

(Salt Creek prices effective May 20, 1929)

‡Salt Creek 29–29.9	$1.10
" " 30–30.9	1.15
" " 31–31.9	1.20
" " 32–32.9	1.25
" " 33–33.9	1.30
" " 34–34.9	1.35
" " 35–35.9	1.40
" " 36–36.9	1.45
" " 37 and above	1.50
Elk Basin	1.65
Grass Creek light	1.65
Bid Muddy	$1.43
Lance Creek	1.68
Rock Creek	1.40
Mule Creek	1.20
Rex Lake	1.10
‡Osage	1.65
‡Cat Creek, Mont	1.65
Sunburst, Mont	1.75
‡Hogback, N. Mex	1.70
Artesia, N. Mex	1.08

‡Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin.

CALIFORNIA

***Standard Oil Co. of California**

Gravity	Alamitos Heights Huntington Beach Signal Hill Seal Beach	Inglewood Torrance	Olinda-Brea Canon †Richfield	Athens-Rosecrans Dominguez	Elwood Terrace	Whittier La Habra	Coyote Hills	Santa Fe Springs	Newhall McKittrick Kern River	Midway Sunset Buena Vista & Elk Hills	Lost Hills	Coalinga	Wheeler Ridge	Montebello	Kettleman Hills	*Santa Maria (Orcutt)	*Ventura
14–14.9	$ .70	$ .70	$ .70	....	....	$ .70	$ .70	.....	$ .50	$ .50	$ .50	$ .50	$ .50	$ .70	....	$ .65	$ .70
15–15.9	.70	.70	.70	....	....	.70	.70	....	.50	.50	.50	.50	.50	.70	....	.65	.70
16–16.9	.70	.70	.70	....	....	.70	.70	....	.50	.50	.50	.50	.50	.70	....	.65	.70
17–17.9	.70	.70	.70	....	....	.70	.70	....	.50	.50	.50	.50	.50	.70	....	.65	.70
18–18.9	.75	.75	.75	....	....	.75	.75	....	.50	.56	.56	.56	.56	.70	....	.70	.75
19–19.9	.80	.80	.80	....	....	.80	.80	....	.50	.62	.62	.62	.62	.75	$1.65	.70	.80
20–20.9	.85	.85	.85	....	....	.84	.84	....	....	.68	.68	.68	.68	.80	for	.70	.85
21–21.9	.89	.89	.89	....	....	.88	.88	.89	....	.74	.74	.74	.74	.85	55°	.86	.86
22–22.9	.93	.93	.93	....	....	.91	.91	.92	....	.80	.80	.80	.80	.90	gravity	.87	.87
23–23.9	.97	.97	.97	....	....	....	.94	.95	....	.85	.85	.85	.85	.95	and	.90	.90
24–24.9	1.01	1.01	1.01	1.01	....	....	.97	.98	....	.90	.90	.88	.88	.98	over	.94	.94
25–25.9	1.05	1.05	1.05	1.05	....	....	1.00	1.01	....	.95	.95	.91	.91	1.01	....	.98	.98
26–26.9	1.09	1.09	1.09	1.09	....	....	1.04	1.04	....	1.00	1.00	.94	.94	1.04	....	1.02	1.02
27–27.9	1.13	1.13	1.13	1.13	....	....	1.08	1.07	....	1.05	1.05	.98	.97	1.07	....	....	1.06
28–28.9	1.17	1.17	1.17	1.17	....	....	1.12	1.10	....	1.10	1.10	1.02	....	1.10	....	....	1.10
29–29.9	1.21	....	1.21	1.21	....	....	1.16	1.15	....	1.16	1.16	1.06	....	1.13	....	....	1.14
30–30.9	1.25	....	1.25	1.25	....	....	1.20	1.20	....	1.22	1.22	1.10	....	1.16	....	....	1.18
31–31.9	1.30	....	1.30	1.30	....	....	....	1.25	....	1.28	1.28	1.14	....	....	....	....	1.23
32–32.9	1.35	....	....	1.35	....	....	....	1.30	....	1.34	1.34	1.18	....	....	....	....	1.28
33–33.9	....	....	....	1.41	....	....	....	1.35	....	1.40	1.40	1.22	....	....	....	....	1.34
34–34.9	....	....	....	1.47	$1.16	....	....	1.40	....	....	1.46	1.26	....	....	....	....	....
35–35.9	....	....	....	1.53	1.22	....	....	1.45	....	....	1.52	1.30	....	....	....	....	....
36–36.9	....	....	....	1.59	1.28	....	....	1.50	....	....	....	....	....	....	....	....	....
37–37.9	....	....	....	1.65	1.34	....	....	1.55	....	....	....	....	....	....	....	....	....
38–38.9	....	....	....	1.71	1.40	....	....	1.60	....	....	....	....	....	....	....	....	....
39–39.9	....	....	....	1.77	1.46	....	....	1.65	....	....	....	....	....	....	....	....	....
40–40.9	....	....	....	1.83	1.52	....	....	....	....	....	....	....	....	....	....	....	....
41–41.9	....	....	....	1.89	1.58	....	....	....	....	....	....	....	....	....	....	....	....
42–42.9	....	....	....	1.95	1.64	....	....	....	....	....	....	....	....	....	....	....	....

*Santa Maria and Ventura postings are by Union Oil Co. Union Oil Co. posts same prices in all above fields as Standard except it does not post prices in Wheeler Ridge, Whittier, La Habra, Newhall and Kettleman Hills. Standard does not contract for crude testing 11-13.9 gravity, but pays 45c a barrel when purchased.

†Richfield posted only to 30-30.9 at $1.25.

REFINERS' and COMPOUNDERS' SUPPLIES

Following are average market prices for materials used by refiners and compounders effective on the date shown.

Refiners' Supplies

	Nov. 25	Nov. 18
Soda Ash light 58% bags, cwt.	$1.32	$1.32
Silicate of Soda 60 deg. drums, cwt.	$1.55	$1.55
Silicate of Soda 40 deg. tank cars, cwt.	$0.60	$0.60
Silicate of Soda 40 deg. drums cwt.	$0.80	$0.80
Sal Soda wks	$1.00–1.05	$0.90–1.00
Caustic Soda 76% solid, cwt.	$2.90	$2.90
Sulfuric Acid 60 deg. tank cars, f.o.b. shipping point per ton	$11.00	$11.00
Oleum 20%, fuming sulfuric, tank cars, wks	$18.50	$18.50
Sulfur, flowers of, cwt.	$3.10–4.00	$3.10–4.00
Liquid Chlorine, tank cars, wks, lb.	3.50–5.00	3.50–5.00

Compounders' Supplies

Vegetable Oils

Linseed carloads, spot, lb.	15.30	15.30
Tanks, spot	14.50	14.50
Soya Bean, Tanks, coast, lb.	10.50-11.00	10.50-11.00

Oleic Acid

Distilled, tanks, lb.	9.75	9.75
Distilled, bbls, lb.	10.625	10.625
Saponified, tanks, lb.	9.75	9.75
Saponified, bbls, lb.	10.625	10.625

Lard Oils

Prime Winter Strained, lb.	15.25	15.25
Extra Winter Strained, lb.	12.75	12.75
Extra, lb.	12.50	12.50
Extra No. 1, lb.	12.00	12.00
No. 1, lb.	11.75	11.75
No. 2, lb.	11.50	11.50
Tallow oil, lb.	11.00	11.00

Neatsfoot Oil

Pure, bbls, lb.	14.50	14.50
Extra, bbls, lb.	12.25	12.25
No. 1 bbls, lb.	12.00	12.00
Cold Pressed, lb.	12.50	12.50

Fish Oils

Menhaden Oil		
Light Pressed, gal.	70	70
Light Pressed, tank cars, N. Y., gal.	58–60	58–60
White bleached, gal.	76	76
Yellow bleached, gal.	71	71
Whale, extra winter bleached, gal.	82	82

Naval Stores

Steam, distilled turpentine, N. Y., gal.	50	53
Steam distilled turpentine, Savannah, gal.	47	53
Gum turpentine, N. Y., gal.	53	56.50
Gum turpentine, f.o.b. cars Savannah, gal.	47	50.50
Wood Rosin F, N. Y., gal.	$7.70	$8.05
Wood Rosin F, Savn'h, bbl.	$6.90	$7.25
Gum Rosin B, N. Y., bbl.	$8.30	$9.00
Gum Rosin B, f.o.b. cars Savannah, bbl.	$7.60	$8.15
Rosin oil, pure, gal.	58	61
Rosin oil, compounded, gal.	47	51

Pine Tar

Kiln burnt, bbl.	$13.00–14.00	$13.00–14.00
Retort, bbl.	$13.50–14.50	$13.50–14.50

Alcohol

Denatured Formula 5, in bbls., per gal.	59–66	59–66

I. T. I. O. to Skim Light Crude In Oklahoma City District

TULSA, Nov. 23

THE Indian Territory Illuminating Oil Co., of Bartlesville, one of the major operators in the Oklahoma City oil field, is preparing to construct a skimming unit in that district, in order that the unusually high gravity crude can be topped before it is run into the pipe lines along with some of the lower gravity oil also produced in that and other districts of the Mid-Continent.

Complete details have not been announced but it is understood virtually all of the equipment will be of the type generally used in connection with natural gasoline plants, and accordingly can be used for that purpose at a later time. More than one unit may be built, according to present plans.

Some of the oil is so high in gravity that it is all but gasoline. Other wells are producing oil of 40 to 52 gravity. Virtually all the oil is excellent for making lubricating oils and the demand for the crude for that purpose has been heavy. The high gravity oil, however, causes considerable loss when run into the pipe lines along with the other crude and it is the intention of the I.T.I.O. to top the oil sufficiently to bring the gravity down to about the average of the oil run in the lines.

The gasoline content will be removed by means of the skimming unit and the gasoline sold, while the residuum will be turned back again into the pipe lines, to be distributed to purchasing refiners who manufacture lubricating oils.

The procedure planned by the I.T.I.O. is virtually the reverse of that adopted several months ago by the Shell Petroleum Co. and the Globe Oil & Refining Co. In that instance the Globe company rehabilitated a plant of the Sinclair Refining Co. at Cushing, Okla., and now operates on West Texas crude.

The Globe plant tops the West Texas crude and puts the gasoline back into the pipe line from the Texas fields where it tends to thin the crude which is en route to the Shell plants at Arkansas City and Wood River, Ill. The Globe company markets the residuum as low cold test fuel oil. The gasoline returned to the pipe lines at Cushing is taken out again at the Shell plants in the course of the usual refining of the crude.

HOUSTON, Nov. 22.—G. N. Bliss, assistant general manager of the marine department, Gulf Refining Co., Port Arthur, has been appointed a member of the American Petroleum Institute's technical committee on the prevention of oil pollution. He is chairman of the Gulf Coast sectional committee. Other Gulf Coastal members are S. W. Oberg, Humble Oil & Refining Co., Houston; John Carlstrom, The Texas Co., Port Arthur; Claude F. Reynaud, Standard Oil Co. of Louisiana, Baton Rouge.

A. P. I. Reports on Stock Increase in Calif.

LOS ANGELES, Nov. 23.—In a summary of California oil field operations, the Pacific Coast office of the American Petroleum Institute announced that the total production of crude oil in California for October amounted to 26,895,160 barrels, an average of 867,586 barrels per day or 2556 barrels per day under the average production for September.

Total stock of crude oil and petroleum products in Pacific Coast territory increased during October 4,659,722 barrels to give a grand total of 184,844,544 barrels. This gives the stock increase for 1929 up to Oct. 31 as 44,843,650 barrels.

During the month, 55 wells were completed having a combined initial production of 50,563 barrels, as compared with 88 wells completed during September for an initial production of 114,991 barrels.

Tells Tulsans of Its Activities

TULSA, Nov. 23.—The Mid-Continent Petroleum Corp., operating a refinery in West Tulsa, has launched a newspaper and publicity campaign for the purpose of acquainting Tulsans with the company's activities in Tulsa and vicinity.

A series of eight full page advertisements will be carried in the Tulsa newspapers. The first advertisement was carried in The Tulsa World the morning of Nov. 19, and a second in The Tulsa Tribune the afternoon of Nov. 22. These advertisements called attention to the company's varied activities, from producing through refining to marketing a complete line of products under the "Diamond" brand.

Tulsans were invited to visit the refinery in West Tulsa where competent guides would explain all phases of the process of refining crude oil. Civic clubs will be invited to attend en masse as will other organizations in the city. Attention also was called in the advertisements to the company's service stations in Tulsa and vicinity.

In connection with the newspaper publicity, the sales department has launched a personal interview campaign and salesmen will call at the homes of motor car owners to tell them of the company's greasing service and the motor oils.

Traffic Club Elects Officers

TULSA, Nov. 22.—D. W. Grubb, general agent for the M.V.-K.O.&G. railroad, was elected president of the Tulsa Traffic Club the evening of Nov. 19. A. H. Evans, traffic manager for the Akin Gasoline Co. was elected vice president, and M. R. Rhoades, traffic representative for the Missouri Pacific railroad, was elected secretary and treasurer.

Three directors were chosen, each to serve two years. They were: W. L. Myers, division freight agent, M.K.&T. railroad; L. W. Witte, assistant traffic manager, Mid-Continent Petroleum Corp., and C. J. Payton, traffic manager, Sinclair Oil & Gas Co.

Bell Plans Plant In Panhandle

TULSA, Nov. 23.—Construction work has started on a 4000 barrel refinery for the Bell Oil & Gas Co., at Pampa, Texas. The plant is scheduled for completion about March 1, 1930. It will be operated on Gray county field crude.

The installation will consist of a tube still and towers. Gray county crude is high in gravity and a yield of approximately 40 per cent gasoline is expected. The company has operated a gathering line in Gray county for some time and with the construction of the refinery this system will be enlarged so the refineries being supplied at present will not be handicapped by the additional crude required for the Bell plant.

The company also operates a refinery at Grandfield, Okla.

Accountants to Dine

TULSA, Nov. 25.—The Independent Oil & Gas Co. the evening of Nov. 25 was host to the accounting division of the Tulsa office as well as managers of the other divisions of the company, at a banquet at the Tulsa Club. Approximately 350 employes and guests were present.

WASHINGTON, Nov. 23.—A court attack on the administration's policy of issuing no oil development permits on public lands was begun here by Roy G. Barton. He filed a petition for a writ of mandamus to compel the Secretary of the Interior to issue him a permit. Action was filed in the supreme court of the District of Columbia.

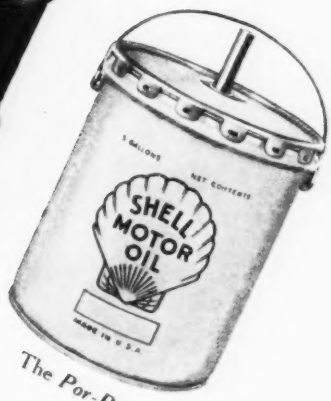
No. 3 *oil drum*

. . . . . When is a drum *not* a drum

Don't be misled by the opinion that all drums are alike. There is quality of design, raw materials and construction which you will *discover thru usage.* BENETCO drums have attained this perfection: they're cut from steel drawn to our analysis, they're free from the human touch in manufacture, they're submitted to double inspection tests and their enamel paint is baked on. These drums are without a flaw . . . *fully guaranteed.* Inspect a sample at once.

The Por-Can

No. 4A grease drum



The Por-Pail

BENETCO

the

Steel Container

Specialists

WILSON & BENNETT MFG. CO.

6520 S. Menard Ave. CHICAGO

39 Cortlandt St. NEW YORK

Sales representatives in principal cities

No. 11 *grease drum*

Transactions in Oil Shares on New York Stock Exchange

1928 High	1928 Low	1929 High	1929 Low	Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended Nov. 22 Sales	First	High	Low	Last	Change
43⅞	27⅜	42⅝	17½	(sh) 922,075	N.P.	Amerada Corp.	50cQ	Oct. 31, 29	6,700	21½	22	21	21½	+ ¼
85	51¼	64¾	12½	(sh) 209,180	N.P.	American Republics Corp.	....	.....	8,100	18	22⅝	16⅛	20⅝	+ 1¼
53¾	37½	47¼	40	$56,000,000	$25	Associated Oil.	50cQ	Sept. 30, 29	50	40	40	†40	40	0
62½	50	77⅞	30	50,000,000	25	Atlantic Refining.	‡25cQ	Sept. 15, 29	49,000	41¼	43⅝	40⅛	42⅝	+ 2½
53	20	49⅛	20	47,261,125	25	Barnsdall Corp. A.	50cQ	Nov. 7, 29	54,000	24½	26¾	23¾	26⅜	+ 2⅝
51¾	20	49	38⅛	300,525	25	do B.	50cQ	Nov. 7, 29	.....	.....	.....	.....	.....	.....
24½	12¼	32⅞	15	(sh) 956,075	N.P.	Beacon Oil.	....	.....	3,900	18¼	18¼	17	17½	— ¾
36	25¾	34½	25	$51,524,150	$25	California Petroleum.	....	Jan. 1, 29	.....	.....	.....	.....	.....	.....
....	....	37¾	18	(sh) 4,634,163	N.P.	Continental Oil (Delaware).	....	.....	60,800	23⅜	27½	22	27	+ 4⅛
94⅞	68	94¾	42¼	21,031,400	100	General Asphalt.	....	.....	10,400	50⅜	56	49	54¼	+ 5⅛
141	110⅜	138	103½	6,628,200	100	do pfd.	$1.25Q	Sept. 3, 29	.....	.....	.....	.....	.....	.....
167	79	109	23	25,000,000	100	Houston Oil.	....	.....	19,100	47¾	52½	42	50½	+ 6½
38¾	21¾	39¼	17¾	(sh) 1,333,157	N.P.	Independent Oil & Gas.	50cQ	Oct. 31, 29	19,100	24¾	25	23½	24⅞	+ 1⅜
39⅝	9	53	13	$4,299,190	$10	Indian Refining.	....	Dec. 15, 20	36,700	20⅞	21⅞	19¼	21	0
37¼	8½	51¼	11½	4,550,110	10	do ctfs.	....	.....	10,200	20⅛	20¾	18¼	19¼	— ¾
185	140	165	160	1,977,700	100	do pfd. new.	$1.75Q	Oct. 1, 29	.....	.....	.....	.....	.....	.....
39⅜	27⅜	38⅜	16½	3,992,387	N.P.	Lago Oil & Transport.	....	May 2, 27	3,400	20½	23	20½	23	+ 1⅝
19¾	9⅜	18	7	(sh) 1,187,298	N.P.	Louisiana Oil Refining.	....	.....	13,200	8½	10	8½	10	+ 1½
96	78	100¼	80	$4,000,000	$100	do pfd.	$1.62½	Nov. 15, 29	310	80½	89	80½	89	+ 4
25½	12½	18½	10	(sh) 330,000	N.P.	Maracaibo Oil.	....	.....	.....	.....	.....	.....	.....	.....
360	250	295	176	$45,942,800	$100	Mexican Petroleum.	$3Q	Oct. 20, 29	.....	.....	.....	.....	.....	.....
...	...	...	...	12,000,000	100	do pfd.	$2Q	Oct. 20, 29	.....	.....	.....	.....	.....	.....
73	4⅜	69⅜	9¼	(sh) 995,500	N.P.	Mexican Seaboard.	....	Nov. 15, 24	52,200	15⅜	19	13⅜	18½	+ 3⅜
44½	25⅛	39⅞	22⅛	(sh) 1,857,461	N.P.	Mid-Continent.	50cQ	Nov. 15, 29	29,900	28	30⅜	27⅛	29⅜	+ 1⅞
120½	103¼	121	120¼	$6,718,000	$100	do pfd.	$1.75Q	Sept. 1, 29	.....	.....	.....	.....	.....	.....
7⅜	2⅜	5⅛	¾	23,849,720	10	Middle States.	....	July 1, 23	.....	.....	.....	.....	.....	.....
5⅞	1½	3⅜	⅞	5,950,500	10	do ctfs.	....	.....	4,500	1¼	1¼	1	1¼	0
2¼	1	1½	⅝	(sh) 3,500,000	N.P.	Pacific Oil.	....	.....	5,400	⅞	1	⅞	⅞	0
55½	38¼	69	40¼	$50,000,000	$50	Pan American P. & T.	....	Oct. 20, 27	7,300	60	63	60	62¾	+ 2¼
58⅞	37¾	69¼	40½	121,101,400	50	do B.	....	Oct. 20, 27	56,300	60¾	63	59⅝	62½	+ 2⅛
28⅝	15½	17½	13½	(sh) 400,000	N.P.	Pan American Western B.	....	Jan. 30, 27	.....	.....	.....	.....	.....	.....
21⅜	11½	15¼	3	(sh) 199,370	N.P.	Panhandle P. & R.	....	.....	2,100	4⅜	5⅞	4¼	5⅜	+ 1⅛
106¼	70	76	47½	$2,935,200	$100	do pfd.	....	July 2, 23	.....	.....	.....	.....	.....	.....
53⅞	35¼	47	24¼	(sh) 2,406,803	N.P.	Phillips Petroleum.	37½cQ	Oct. 1, 29	45,900	30⅞	36	29⅝	36	+ 5
5¼	½	3⅜	1	$29,622,925	$25	Pierce Oil Corp.	....	.....	5,100	1⅜	1½	1¼	1⅜	+ ¼
50	16¼	51½	20	15,000,000	100	do pfd.	....	Feb. 1, 22	200	25⅝	25⅝	25½	25½	+ 1½
6⅝	3½	5⅞	½	(sh) 2,500,000	N.P.	Pierce Petroleum.	....	.....	3,500	2¾	2¾	2½	2¾	+ ¼
64⅜	59½	65⅝	40½	$60,636,450	$25	Prairie Oil & Gas.	‡50cQ	Sept. 30, 29	4,700	47¼	53½	47	53	+ 6¼
....	....	65	45	101,250,000	25	Prairie Pipe Line.	‡75cQ	Sept. 30, 29	14,600	56¼	58⅞	56	58⅝	+ 2¾
29⅞	16	25⅞	4	37,450,850	50	Producers & Refiners.	....	Sept. 15, 23	4,200	6⅞	8¾	6⅞	8⅛	+ 1⅝
49⅜	41	46¾	25½	2,845,350	50	do pfd.	....	May 1, 25	1,580	31½	31½	27	31½	+ 1⅜
31¼	19	30¾	20	75,959,255	25	Pure Oil Co.	37½cQ	Sept. 1, 29	21,800	23⅞	24¼	22¼	23¾	+ ⅝
119	108	116	108	13,000,000	100	do 8% pfd.	$2Q	Oct. 1, 29	440	109⅞	110	109⅛	110	+ 1
56	23½	49⅝	20	47,127,725	25	Richfield Oil.	50cQ	Nov. 15, 29	14,900	29	30	28¼	29¼	— ¼
....	....	42½	15	(sh) 1,200,000	N.P.	Rio Grande Oil Co.	‡$1S.A.	July 25, 29	14,200	18¾	20⅞	18¼	20⅝	+ 1⅞
64	44⅝	64	43⅛	(sh) 546,646	$13.40	Royal Dutch N. Y. shares.	$1.873	Aug. 10, 29	30,900	53⅛	53⅞	52¼	52⅞	— 1
57½	39⅜	55¾	43	(sh) 65,203,000	£2	Shell Transport & T.	$1.447	July 23, 29	200	44¾	44¾	44¾	44¾	— 4⅜
39⅜	23¼	31¾	19	12,254,979	N.P.	Shell Union Oil.	35cQ	Sept. 30, 29	25,300	24	24⅞	23	24	0
27¼	18⅛	40⅛	15	$8,357,280	$10	Simms Petroleum.	40cQ	Sept. 14, 29	11,600	20½	24⅜	18½	23½	+ 3½
46¾	17⅜	45	21	5,494,095	N.P.	Sinclair Consolidated.	‡50cQ	Oct. 15, 29	90,900	25⅜	28	24⅞	27⅞	+ 2⅞
110	102½	111	103	$16,025,200	$100	do pfd.	$2Q	Nov. 15, 29	1,800	105	105	105	105	0
42⅜	25	46½	28	27,396,590	25	Skelly Oil Co.	50cQ	Sept. 16, 29	11,100	23⅞	34½	31¼	34⅛	+ 2¾
80	53	81⅞	51½	(sh) 13,016,435	N.P.	S. O. California.	62½cQ	Sept. 16, 29	37,800	63⅛	63⅜	60	62	— 1
59¾	37¾	83	48	$612,095,850	$25	S. O. New Jersey.	‡25cQ	Sept. 16, 29	171,900	60⅞	65½	58¾	65	+ 4¼
45½	28¾	48⅜	31¾	434,094,575	25	S. O. New York.	40cQ	Sept. 16, 29	35,800	35¾	36	34⅛	35⅞	+ ¾
77	31½	84¾	55½	(sh) 1,297,847	N.P.	Sun Oil.	25cQ	Sept. 16, 29	3,300	62⅞	69½	62⅞	69½	+ 6¾
110	100	105½	100	$5,000,000	$100	do pfd.	$1.50Q	Sept. 1, 29	220	103	103	102	102	0
14¼	2½	24	5¼	(sh) 1,304,698	N.P.	Superior Oil Corp.	....	Dec. 20, 20	8,000	8½	8⅝	7¾	8½	+ ¼
74¾	50	71⅞	50	$211,082,925	$25	The Texas Corp.	75cQ	Oct. 1, 29	41,100	54½	56⅞	53⅛	56½	+ 2⅝
26⅜	12⅜	23⅞	9½	8,380,340	10	Texas Pacific Coal & Oil.	2½%	Sept. 30, 29	6,600	11	11⅞	10⅜	11⅝	+ 1⅜
41½	19⅜	40	14	(sh) 2,179,275	N.P.	Tide Water Oil Co.	20cQ	Sept. 30, 29	1,100	19½	23½	19¼	22⅛	+ 4⅝
100⅛	86¾	97½	85⅛	$20,321,000	$100	do 5½% pfd.	$1.25Q	Nov. 15, 29	500	87⅞	88	85⅛	87¾	+ ¾
25	14¼	23½	10	(sh) 4,877,976	N.P.	Tide Water Associated.	.....	Aug. 1, 27	52,900	13	14⅛	12½	13⅞	+ 1⅝
91¾	81⅞	90⅞	74⅛	$72,989,200	$100	do pfd.	$1.50Q	Oct. 1, 29	1,500	80	83	77⅝	80⅝	+ 3⅛
14½	6¾	15¼	5⅛	(sh) 3,842,029	N.P.	Transcontinental Oil.	....	.....	98,000	7⅝	8⅝	7¼	8½	+ ⅞
58	42¾	54½	42⅛	$40,858,375	$25	Union Oil of California.	‡50cQ	Nov. 9, 29	10,600	44⅞	46	43⅛	46	+ 1½
128⅛	110	163¾	121⅞	31,101,200	100	Union Tank Car Co.	$1.25Q	Sept. 3, 29	1,000	138	142	138	140	+10
44⅞	26	42⅞	15	(sh) 488,359	N.P.	Warner Quinlan.	50cQ	Oct. 1, 29	11,000	22	23	21	22⅝	+ 1⅝
38	20⅛	38	25	(sh) 490,000	N.P.	White Eagle Oil & Refining.	50cQ	Oct. 21, 29	4,000	28¾	30	27	30	+ 3½
22⅛	17¼	29¾	12⅞	(sh) 428,967	N.P.	Wilcox Oil & Gas.	....	May 10, 28	2,200	15	15⅜	15	15¼	+ 2½

*New High †New Low XEx-Dividends ‡Also Extras s-Stock Total Sales 1,235,800

Pittsburgh Stock Exchange

Transactions Week Ended Nov. 22, 1929

	Sales	High	Low	Last	Change
Ark. Nat. Gas.	770	13	11½	13	+2
do pfd.	1,936	7⅜	7⅛	7¾	+ ⅜
Columbia Gas.	113	73½	70⅝	70⅝	...
Devonian Oil	220	10½	10	10½	+ ½
Dixie Gas & Util. pfd.	138	73½	72¾	72¾	—1¼
Lone Star Gas.	11,623	35½	31½	35	+2¼
Pet. Explor.	90	31	30	31	0
Plymouth Oil.	4,510	30	26⅛	30	+5
Salt Creek Cons.	60	2½	2½	2½	+ ¼
Shamrock O. & G.	....	16	15	16	+ ⅛

Pittsburgh Curb Market

Transactions Week Ended Nov. 22, 1929

	Sales	High	Low	Last	Change
Gulf Oil.	200	134⅞	134⅞	134⅞	...
Ark. Gas "A".	300	11¼	11⅛	11¼	...
Leonard Oil & Dev.	2,000	2	2	2	...
Lone Star Gas pfd.	375	101½	100	101½	...

ARDMORE, Okla.—C. A. Franklin has been appointed refinery sales manager of the Wirt Franklin Petroleum Corp. here, succeeding D. A. Corcoran who resigned, according to Wirt Franklin, president.

Omar Opens Division Sales Office in Minneapolis

TULSA, Nov. 22.—The Omar Refining Co. of Tulsa, has opened a northwestern division sales office in Minneapolis, with Perry C. Sanborn as manager, according to an announcement by company officials.

Mr. Sanborn is well known among jobbers in the northwest. He has had considerable experience in that section of the country. From 1921 to 1923 he was sales manager for the Pure Oil Co., and then was made manager of tank car sales during 1923 and a part of 1924.

In 1924 Mr. Sanborn joined the John Hancock Oil Co. of Minneapolis as secretary, which position he held until the company was sold recently to the Phillips Petroleum Co. of Bartlesville.

Mr. Sanborn was also active as an association worker. He was president of the Twin City Petroleum Club for three years, 1927, 1928 and 1929, and was president of the Minnesota Petroleum Association until his resignation from the Hancock company in July, 1929.

Cleveland Stock Market

Nov. 22	Par Value	Bid	Asked
Canfield Oil Co.	$100	...	146
do pfd.	100	102	...
Fred G. Clark Inc.	10	8	8⅜
National Refining Co.	25	34	35
do pfd.	100	...	...
Paragon Refining Co.	25	10¼	11
do pfd.	N.P.	...	...
do ctfs.	...	10	11

Oil Dividends

	Amount	Payable	Stock of Record
Cities Service m.	2½c	Jan. 2	Dec. 15
do stock m.	½%	Jan. 2	Dec. 15
do pfd. m.	50c	Jan. 2	Dec. 15
do pfd. BB m.	50c	Jan. 2	Dec. 15
do pref. B m.	5c	Jan. 2	Dec. 15
N. Y. Transit q.	40c	Jan. 15	Dec. 27
do extra.	10c	Jan. 15	Dec. 27
Royal Dutch interim	10%	.....	.....
Shell Transport interim	10%	Jan. 6	.....
Solar Refining s.a.	$1.25	Dec. 20	Nov. 30

Financial Notes

Standard Oil Co. (N. J.)—Additional 546,000 shares of capital stock has been listed on the New York Stock Exchange and will be used to exchange for more stock in the completely owned operating subsidiary, Standard Oil Co. of New Jersey. The stock will be used by the latter company in its normal operations, it is reported. The 546,000 shares have a market value of approximately $35,000,000 at recent prices.

Standard Oil Co. of Indiana—This company now owns or controls 53 per cent of the outstanding stock of the Pan American Petroleum & Transport Co. Pan American stocks exchanged for Standard of Indiana up to the close of business Nov. 16 will receive the Standard of Indiana dividend in December of 87½ cents a share. On the exchange basis of six Pan American for seven Standard, the dividend is equivalent to $1.02 a share on the Pan American which has not paid a dividend since October, 1927.

Petroleum Corp. of America—Holdings of this investment trust as of Nov. 15 included more than $47,000,000 Prairie Oil & Gas Co. and Prairie Pipe Line Co. stock. That date the trust also held stocks in about 20 other leading oil companies, the company's banker, the Bancamerica-Blair Corp., announced. The corporation recently declared an initial dividend of 37½ cents a share on its common stock.

Prairie Oil & Gas Co.—According to the United Press, W. S. Fitzpatrick, chairman of the board of the Prairie, has stated there is no truth in rumors that a merger was being negotiated with the Sinclair Consolidated Oil Corp.

Tidals To Move Offices

TULSA, Nov. 22.—The Tidal Refining Co. has leased two floors in the new Philcade building, Fifth and Boulder, and will move from the present Tidal building about Jan. 1. The Philcade building was erected by Waite Phillips, chairman of the board of the Independent Oil & Gas Co. Mr. Phillips also owns the Philtower.

Mr. Phillips is understood to be negotiating for a lease on the present Tidal building, at Sixth street and Cheyenne avenue. Decision of Tidal officials to move from the present quarters was made after an engineering survey revealed the present building could not be enlarged adequately to handle the larger force.

NEW YORK—Frederick G. Clapp, petroleum engineer, with offices here and in Paris, has removed his Paris office to 28, rue Poussin, Paris-16e, France.

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FOR SALE ELECTRICALLY OPERATED VACUUM SYSTEM for cleaning oil drums, ½ horse power motor. Photograph on request. Price $85. Address P. O. Box 611, Erie, Pa.

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Sweetland Filters—laboratory size to No. 10. Kelly Filters— No. 150, 250, 450. Pumps, Tanks, etc. Send for complete lists.

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New York City

TANK CARS FOR SALE

8000 gallon, now in gasoline service. Inspection at Kansas City or Okmulgee, Okla. Bargain prices.

M. R. Ducey Ry. Car Co.,
Houston, Texas

Equipment Wanted

SCOW OR TUG WANTED, with or without power, with or without tank, capable of handling 100,000 to 400,000 gallons of petroleum products. Address Box 455.

WANTED: 5-GALLON CAPACITY GASOLINE PUMP slightly used or obsolete model. Address Wilson-Bennett, 6532 South Menard, Chicago, Illinois.

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Standard Oil Stocks on New York Curb

1928 High	1928 Low	1929 High	1929 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended Nov. 23 Sales	First	High	Low	Last	Change
22 3/8	14 7/8	18 3/4	14 1/4	£4,126,460	£ 1	Anglo-American Oil	36c	June 5, '29						
21 1/4	15	18	13	.....	....	do certificates	36c	June 5, '29	4,900	14 1/2	17	14 3/8	17	+ 2
20 1/2	14 3/8	17	11	.....	£ 1	do ctfs. non-voting	36c	June 5, '29	2,800	13 7/8	15 3/8	13 1/8	15 3/8	+ 1 7/8
5	1 1/4	2 1/2	.75	(sh) 500,000	N.P.	Atlantic Lobos	.....	.....	100	1	1	1	1	0
9 3/4	3 1/4	4 1/8	1	$10,000,000	$50	do pfd	.....	.....	300	1 1/4	1 1/4	1 1/4	1 1/4	0
56	44 1/2	46 1/2	25	$1,000,000	25	Borne-Scrymser	$1 S.A.	Oct. 15, '29						
76	58	74 1/4	55	10,000,000	50	Buckeye Pipe Line	‡$1Q	Sept. 14, '29	1,800	58	60	58	60	+ 1 1/4
161	117 1/4	210	130	3,000,000	25	Chesebrough Mfg.	‡$1Q	Sept. 30, '29	300	137 1/2	140 1/4	137 1/2	140 1/4	+10 1/4
23	16	29	8 1/8	36,123,350	10	Continental Oil	.....	Dec. 15, '27	1,200	14 7/8	15 1/2	14 7/8	15 1/2	+ 2
17 1/2	9 1/2	11 3/4	5 5/8	.....	N.P.	Creole Petroleum	.....	.....	84,600	6 3/4	7 1/4	6 1/2	7 1/4	+ 3/8
82	67	95	40	1,500,000	50	Cumberland Pipe Line	$1Q	Sept. 16, '29	250	44 3/4	44 3/4	41	41	— 8
88	64 3/8	70 1/2	42	5,000,000	100	Eureka Pipe Line	$1Q	Nov. 1, '29	1,100	43	43	†42	42	— 6 1/4
13	4 1/4	7	5	16,000,000	100	Galena Signal Oil	.....	June 30, '25						
86	26	90	73 1/2	4,000,000	100	do new pfd	.....	June 30, '26						
89 3/4	35	88	73 1/2	2,000,000	100	do old pfd	.....	June 30, '26						
114 3/4	59 1/4	128	74 1/8	73,685,700	25	Humble Oil & Refining	‡30cQ	Oct. 1, '29	12,400	86 1/8	90 7/8	81	90 1/8	+ 3 7/8
290 1/2	176 1/2	340 1/2	260	20,000,000	100	Illinois Pipe Line	$10S.A.	June 15, '29	4,100	262 1/2	267 1/2	261 3/4	265	+ 5
104	56 3/4	41	22	(sh) 26,421,768	N.P.	Imperial of Canada	12 1/2cQ	Sept. 2, '29	6,300	28	28 7/8	27	28 5/8	+ 5/8
91 7/8	74 5/8	34 7/8	26	$1,000,000	$10	Indiana Pipe Line	‡50cQ	Nov. 15, '29	2,900	30 1/8	31 3/4	30	31 3/4	+ 1 3/4
55	35	29 3/8	15	(sh) 14,247,088	N.P.	International Petroleum	12 1/2c	June 25, '29	22,800	20 7/8	22 1/8	20 5/8	22	+ 3/4
32 3/8	19 3/8	25 7/8	10 1/2	$6,363,350	12.50	National Transit Co	25cQ	Sept. 16, '29	8,800	17 1/8	21 7/8	17 1/8	21	+ 4 1/4
75	38 1/2	85	72	1,000,000	10	New York Transit	40c	Oct. 15, '29						
69	56 1/2	63	41	2,000,000	50	Northern Pipe Line	$2 S.A.	July 1, '29	100	50	50	50	50	+ 8
83 1/2	58 1/2	79 7/8	64 1/8	60,000,000	25	Ohio Oil Co	50cQ	Sept. 14, '29	10,000	68 3/8	68 3/4	68	68 3/4	+ 3/4
84	28	44 1/2	20	10,000,000	25	Penn Mex. Fuel	$1	Sept. 30, '29	300	20	20	20	20	0
220	167	50	33	4,000,000	25	Solar Refining	$1.25S.A.	June 20, '29	100	33 7/8	33 7/8	33 7/8	33 7/8	+ 7/8
19	12	23 1/2	13	1,000,000	10	Southern Pipe Line	$1	Mar. 1, '29	500	21	22 1/2	21	22 1/2	+ 2
71 7/8	36 3/4	60 1/4	35 1/8	30,000,000	25	South Penn Oil	50cQ	Sept. 30, '29	3,600	40 1/8	42 3/8	40 1/8	42	+ 2
102	70	70	45	1,750,000	50	South West Pa. Pipe Lines	$1	Oct. 1, '29	250	49 1/2	49 3/4	49 1/2	49 3/4	+ 4 3/4
95 7/8	70 7/8	63	45	348,175,069	25	S. O. Indiana	62 1/2cQ	Sept. 16, '29	65,100	52 3/8	54 3/4	51 3/4	53 3/8	+ 1 5/8
27 3/4	15	33 3/4	18	8,000,000	25	S. O. Kansas	.....	June 16, '24	3,100	28 1/8	30 3/8	28	30	+ 2
49	44	46 3/8	29	25,654,516	10	S. O. Kentucky	40cQ	Sept. 30, '29	4,700	36 7/8	37 3/8	35 5/8	37	+ 7/8
54 5/8	39 7/8	50 1/4	40	4,649,225	25	S. O. Nebraska	‡62 1/2cQ	Sept. 20, '29	200	42	42	42	42	+ 1 1/8
134	71	129	60	14,000,000	25	S. O. Ohio	62 1/2cQ	Oct. 1, '29	600	85 1/2	89	85 1/2	86	+ 1 1/2
125	116	124 1/2	113 1/2	7,000,000	100	do pfd	$1.75Q	Sept. 3, '29	40	118	118	117 1/2	117 1/2	+ 2 1/4
23 1/2	16	18	10	861,466	25	Swan Finch	30c	Jan. 15, '29	100	10	10	10	10	
111	72	133 3/4	75	126,154,000	25	Vacuum Oil	$1Q	Sept. 20, '29	6,100	93 7/8	97	93 3/8	96 5/8	+ 2 3/4

*New High †New Low ‡Also Extras

Independent Oils on New York Curb

1928 High	1928 Low	1929 High	1929 Low	Par Value	Stocks	Transactions Week Ended Nov. 23 Sales	First	High	Low	Last	Change
1 1/2	.53	.72	.125	$5	Amer. Cons. Oilfields	11,500	3/16	3/16	3/16	3/16	0
9 1/2	3 1/8	8 5/8	1 1/8	N.P.	Amer. Maracaibo	6,400	2	2 1/8	1 3/4	2	0
4 1/2	2 1/4	4 3/4	1 1/8	$10	Argo Oil	400	1 1/4	1 1/4	1 1/4	1 1/4	— 1/8
3 3/4	3 3/8	26	3 3/4	N.P.	Arkansas Nat. Gas	15,500	12	13	11 1/8	12 5/8	+ 3/4
....	....	24 3/4	6 1/2	N.P.	do A	24,400	11 1/8	11 7/8	10 3/4	11 5/8	+ 5/8
....	....	9	4	10	do pfd	4,000	7	7 1/2	7	7 1/2	+ 1/2
55	32 3/4	70	50	N.P.	British American Oil	.....	.....	.....	.....	.....	.....
23 7/8	3 3/4	4 7/8	1	25c	Carib Syndicate	5,800	1 1/2	1 1/2	1 1/4	1 1/4	— 1/8
....	....	68 1/8	20	N.P.	Cities Service new	257,000	30	30 7/8	29	30 1/2	+ 1/2
103 1/2	94 1/2	99 1/4	84	100	do pfd	3,500	87	89 3/4	86 3/4	89 3/4	+ 2 3/4
9 5/8	8 7/8	9 1/4	8	10	do pref. B	1,500	8	8 1/2	8	8 1/2	0
97	88 1/2	96	88	100	do pref. BB	.....	.....	.....	.....	.....	.....
2 1/4	1	1 1/2	1/8	1	Colombia Syndicate	1,000	1/16	1/16	1/16	1/16	0
17 3/4	9 3/4	15	3 7/8	N.P.	Colon Oil	17,000	6 1/2	7 1/2	6 1/8	7	+ 5/8
8 7/8	6 1/4	11 1/8	2 1/2	10	Consolidated Royal	1,500	4 3/8	4 1/2	4	4 1/2	+ 3/4
....	....	135	42	N.P.	Cosden Oil Co	2,200	60 1/8	80	60 1/8	80	+ 5
....	....	82	55	....	do pfd	300	55 1/4	56	55 1/4	56	+ 1
3 1/4	.76	2 1/2	5/8	N.P.	Crown Central	.....	.....	.....	.....	.....	.....
15	6 3/4	11 3/4	4	N.P.	Crystal Oil	.....	.....	.....	.....	.....	.....
50	48	51 1/8	51 1/8	$100	do pfd	.....	.....	.....	.....	.....	.....
33 1/2	8 1/8	26	6 1/2	N.P.	Darby Petroleum	8,400	9 1/4	9 1/4	8 1/4	8 7/8	— 1/2
2 7/8	1	11	2	N.P.	Derby Oil & Refining	3,100	5 1/8	5 1/2	5	5 1/2	+ 1/2
21 1/8	7 1/2	44	5	N.P.	do pfd	.....	.....	.....	.....	.....	.....
165	101 1/8	209	115	$25	Gulf Oil Corp	12,800	136 1/4	137 3/8	131 7/8	136	+ 3/4
7 1/2	5 5/8	7 1/2	1 1/8	5	Homaokla Oil	1,400	2 7/8	3 1/2	2 1/8	3 1/2	+ 3/4
....	....	49 1/4	5	$1	Indian Territory	8,400	19 1/4	20	18	18 1/2	+ 5/8
3 3/8	1	2 7/8	3/8	10	Intercontinental Pet.	5,800	7/8	7/8	3/4	7/8	+ 1/8
3	1/4	3 5/8	1 1/4	N.P.	Kirby Petroleum	8,800	2 1/8	2 1/8	1 3/4	1 3/4	— 1/4
9 3/8	5 1/8	6 1/8	2	N.P.	Leonard Oil & Dev	8,900	2 7/8	2 7/8	2	2 1/8	0
43 3/8	20	38 7/8	18	N.P.	Lion Oil & Refg	3,700	20	22	20	22	+ 2
....	....	67 7/8	28	N.P.	Lone Star Gas	4,400	32 3/4	34 7/8	31	34 3/4	+ 2 1/8
1 7/8	.50	1 1/4	1/4	1	Magdalena Syndicate	4,200	3/8	3/8	1/4	5/16	— 1/16
48 1/2	32	38 1/2	15	N.P.	Margay Oil	100	15	15	15	15	— 3/4
8	2 3/4	6 3/8	2 1/2	N.P.	Mexico-Ohio Oil	1,400	2 3/4	3	2 3/4	2 7/8	— 1/8
....	....	42	8	N.P.	Missouri-Kan. P. L	8,400	15 7/8	17 3/8	15 1/2	16 7/8	+ 1/8
1 3/4	.76	1 1/2	1/4	1	Mountain & Gulf	3,900	3/4	3/4	3/4	3/4	+ 1/2
28 7/8	19 1/2	22 7/8	7	10	Mountain Producers	9,400	8 1/2	9 7/8	8 1/8	9 7/8	+ 1 3/8
....	....	43 7/8	24	N.P.	Nat. Fuel Gas (new)	3,900	26 1/2	28 1/2	26 3/8	28 1/2	+ 2 1/2
5 5/8	4 1/4	5	2 1/4	5	New Bradford	1,200	2 5/8	3	2 1/2	3	+ 1/2
5 1/2	3	3 7/8	2 3/4	10	New England Fuel	.....	.....	.....	.....	.....	.....
11 7/8	7 1/8	9 3/8	2 1/4	1	New Mex. & Ariz	100	3 1/2	3 1/2	3 1/2	3 1/2	+ 3/8
15 1/2	11 1/2	24 1/2	11 1/8	25	New York Petrol	600	12	12 1/2	11 1/4	12 1/2	+ 1/2
13 1/4	8 1/8	18 1/2	6 1/8	N.P.	North Cent. Texas	700	7 1/2	7 1/2	†6 1/8	7 1/2	+ 1/2
....	....	19 1/4	8 1/8	N.P.	Oil Stock, Ltd. A	700	9 1/8	10	9 1/8	10	0
....	....	18 1/4	10	N.P.	do B	200	11	11	11	11	0
26 1/4	20	26 5/8	12 5/8	N.P.	Pacific Western Oil	800	14 1/2	15 7/8	14	15 5/8	+ 1 1/8
6	2 1/4	3 1/2	1/2	N.P.	Pandem Oil	1,400	1/2	3/4	5/8	5/8	— 1/16
15 5/8	8 1/2	10 1/2	2 3/8	N.P.	Pantepec Oil	1,500	3 3/4	4 1/8	3 1/8	4	+ 1 1/8
20	10 3/8	25 1/2	22 1/2	$25	Paragon Refg. B. ctfs.	.....	.....	.....	.....	.....	.....
....	....	34 1/2	17	N.P.	Petroleum Corp	2,800	20 1/8	21 1/2	19 3/4	21 1/4	+ 1 1/4
31 3/8	26 1/2	37	22	N.P.	Plymouth Oil	1,900	26 7/8	30	26	30	+ 4 1/8
18	8	16	9 5/8	25	Red Bank Oil	.....	.....	.....	.....	.....	.....
13	4 1/8	8 1/2	1 1/8	N.P.	Reiter-Foster	1,000	2 1/4	3 3/8	2 1/8	3 1/8	+ 1
31 1/2	23 1/4	25 1/2	19	$25	Richfield pfd	100	19 1/2	19 1/2	19 1/2	19 1/2	0
....	....	29	17	....	Root Refining pfd	100	20	20	20	20	+ 3
12	4 3/8	11	3	N.P.	Ryan Consolidated	700	5	4 3/4	4 1/2	4 5/8	+ 7/8
7 1/4	5 1/2	5 7/8	1 7/8	$10	Salt Creek Cons	500	2	2 1/8	†1 7/8	2	— 1/4
35	23 1/4	25 7/8	9	10	Salt Creek Prod	1,800	10	12 7/8	10	11 5/8	+ 1 1/4
3 1/2	1	2 1/2	1/2	5	Savoy Oil	.....	.....	.....	.....	.....	.....
40	27	33 1/8	32	25	Shreveport El Dorado	.....	.....	.....	.....	.....	.....
....	....	24	11 1/8	N.P.	Southland Royalty	1,500	12	12	†11 1/8	12	0
....	....	12	4	N.P.	Sunray Oil	2,600	5 7/8	8 3/4	5 7/8	8 1/4	+ 2 3/8
....	....	23	7 1/8	N.P.	Texon Oil & Land new	400	12	12	10 3/8	10 1/2	— 1 1/2
22 7/8	13	16 7/8	11 5/8	$10	Tidal Osage	.....	.....	.....	.....	.....	.....
21 1/4	13 1/8	16 1/2	10 1/8	10	do not-voting	.....	.....	.....	.....	.....	.....
93 3/4	75	155	80	100	Transcontinental pfd	.....	.....	.....	.....	.....	.....
74 1/4	18	81 1/8	66	10	Venezuela-Mexico	400	77	77 1/2	77	77 1/2	0
9 1/8	4 3/4	6 1/2	1 1/8	3	Venezuelan Petrol	11,700	2 1/8	2 3/8	2	2 3/8	+ 1/8
....	....	72 1/4	66	N.P.	White Star Oil	.....	.....	.....	.....	.....	.....
8 1/4	4 7/8	9 1/8	2	1	Woodley Petroleum	600	3 5/8	3 5/8	3 3/8	3 3/8	+ 3/8
3/8	1/8	5 3/8	1/2	25	Y Oil & Gas	200	1 1/8	1 1/8	1 1/8	1 1/8	+ 1/8

*New High †New Low

New York Curb Bonds

Week ending Nov. 22

	High	Low	Last	Change
Beacon Oil 6s '36	105 1/8	102 3/8	105 1/8	+2 7/8
Cities Serv. 5s '66	84 7/8	79 1/8	84 7/8	+4 7/8
Cities Serv. G. 5 1/2s '42	85	80 1/2	84 1/2	+1 1/2
Cities Serv. G. Pipe 6s '43	90 3/4	89	90 3/4	+1 1/4
Cont. Oil 5 1/4s '37	93	92	92	0
Empire O & R 5 1/2s '42	84 3/4	83	84 3/4	+ 3/4
Gulf Oil 5s '37	99 3/8	99	99 3/8	+ 3/8
Gulf Oil 5s '47	100 1/2	98 3/4	100 1/2	+1 3/4
Indep. Oil 6s '39	102	100	101 1/2	+1 1/2
Sun Oil 5 1/2s '39	100	99	99 1/2	0
Valvoline Oil 7s '37	103	103	103	0

New York Bonds

Week Ending Nov. 22

	High	Low	Last	Change
Asso. Oil Gold 6s	101 1/2	100 7/8	101 1/2	+1/2
Atlantic Refg. deb. 5s	101 1/2	100	101 1/2	+1
Cal. Pet. 5s	93	92	93	+1 1/2
Cal. Pet. 5 1/2s	99	96	99	+3 1/4
General Pet. 5s	100 1/2	99 1/2	100 1/2	+ 3/4
Humble Oil & Refg. 5s	100 3/8	99 1/4	100	+ 3/4
Humble Oil & Refg. 5 1/2s	100 1/2	100	100 3/8	— 1/8
Pan. Amer. P & T 7s	105 1/8	104 1/2	105 1/8	+1/2
Pan. Amer. P & T 6s	104 3/4	103	104	+1 1/2
Pan. Amer. P & T 6s	95 3/4	94	95 1/2	+ 1/4
Phillips Pet. 5 1/4s	90	86	90	+4
Pierce Oil deb. 8s	103	103	103	0
Pure Oil 5 1/2s	98	97	98	+ 3/4
Shell Union Oil 5s	94 1/4	91 1/2	93 1/2	— 1/4
Sinclair Con. Oil 7s	100 1/2	98 3/4	100 1/2	+ 3/4
Sinclair Con. Oil 6 1/2	98 1/4	96	98 1/4	+2
Sinclair Con. Oil 6s D	99 1/8	98 1/2	99 1/8	+ 3/8
Sinclair Con. Crude 5 1/2s	96	93	95 5/8	+1 5/8
Sinclair Pipeline	94 1/2	91 1/2	94	+2 1/2
Skelly Oil 5 1/2s	90	83 1/4	90	+2 3/4
S. O. N. J. 5 1/2s	102	100 1/2	102	+1
S. O. N. Y. 4 1/2s	96	93	96	+3
Union Oil of Calif. 6s A	105	104	105	+1
Union Oil of Calif. 5s C	97	96	97	+1/2
Warner-Quinlan 6s	90	83	87	+2
White eagle Oil 5 1/2s	96 7/8	95 5/8	96 5/8	+ 3/8